

Neolithic Studies Group Seminar Papers 15

Neolithic Bodies

Edited by

Penny Bickle and Emilie Sibbesson



VISIT...

LANZAROTE
Caliente.COM

NEOLITHIC BODIES

Neolithic Bodies

Neolithic Studies Group Seminar Papers 15

Edited by

Penny Bickle and Emilie Sibbesson

Published in the United Kingdom in 2018 by
OXBOW BOOKS
The Old Music Hall, 106-108 Cowley Road, Oxford, OX4 1JE

and in the United States by
OXBOW BOOKS
1950 Lawrence Road, Havertown, PA 19083

© Oxbow Books and the individual contributors 2018

Paperback Edition: ISBN 978-1-78570-901-2
Digital Edition: ISBN 978-1-78570-902-9 (epub)

A CIP record for this book is available from the British Library

Library of Congress Control Number: 2018947537

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopying, recording or by any information storage and retrieval system, without permission from the publisher in writing.

Typeset in India by Versatile PreMedia Services. www.versatilepremedia.com

For a complete list of Oxbow titles, please contact:

United Kingdom
Oxbow Books
Telephone (01865) 241249
Email: oxbow@oxbowbooks.com
www.oxbowbooks.com

United States of America
Oxbow Books
Telephone (800) 791-9354, Fax (610) 853-9146
Email: queries@casemateacademic.com
www.casemateacademic.com/oxbow

Oxbow Books is part of the Casemate Group

*Front cover: Example of an individual buried in a regular body position, Gougenheim, Alsace, France
(photo: G. Alix, Institut National de Recherches Archéologiques Préventives).*

Foreword

This book presents the proceedings of a seminar held in November 2014, organised by the Neolithic Studies Group (NSG), that forms part of an ongoing series of NSG seminar papers. Not only is this the fifteenth volume in the series, but the meeting from which it derives celebrated the 30th anniversary of the founding of the NSG.

The NSG is an informal organisation comprising archaeologists with an interest in Neolithic archaeology. It was established in 1984 and has a large membership based mainly in the UK and Ireland, but also including workers from the nations of the Atlantic seaboard. The annual programme includes two or three meetings spread throughout the year and seminars held in London and field meetings at various locations in northwest Europe.

Membership is open to anyone with an active interest in the Neolithic in Europe. The present membership includes academic staff and students, museums staff, archaeologists from government institutions, units, trusts and amateur organisations. There is no membership procedure or application forms and members are those on the current mailing list. Anyone can be added to the mailing list at any time, the only membership rule being that names of those who do not attend any of four consecutive meetings are removed from the list (in the absence of apologies for absence or requests to remain on the list).

The Group relies on the enthusiasm of its members to organise its annual meetings and the two co-ordinators to maintain mailing lists and finances. Financial support for the group is drawn from a small fee payable for attendance of each meeting.

Anyone wishing to contact the Group and obtain information about forthcoming meetings should contact the co-ordinators at the following addresses:

TIMOTHY DARVILL
Department of Archaeology,
Anthropology & Forensic Science
Bournemouth University
Poole
Dorset BH12 5BB

KENNETH BROPHY
Department of Archaeology
University of Glasgow
Glasgow
G12 8QQ

Alternatively, visit the NSG website: <http://www.neolithic.org.uk/>.

Contents

Foreword by <i>Timothy Darvill and Kenneth Brophy</i>	v
Preface and acknowledgements	viii
List of contributors	ix
1. Bodies, old and new	1
<i>Penny Bickle and Emilie Sibbesson</i>	
2. Both permeable and partible: Exploring the body world of Early Neolithic southern Britain	7
<i>Oliver J. T. Harris</i>	
3. Life on the frontier: Stress in early farming communities	25
<i>Abigail Ash and Ron Pinhasi</i>	
4. Consuming bodies: Bowls, bones, food and fire in Early Neolithic Britain	44
<i>Emilie Sibbesson</i>	
5. Articulating the disarticulated: Human remains from the Early Neolithic of the eastern Fertile Crescent (eastern Iraq and western Iran)	60
<i>Sam Walsh and Roger Matthews</i>	
6. Warm air and glowing pyres: Cremating bodies in the Late Neolithic of mainland Scotland	74
<i>Kenneth Brophy, Gavin MacGregor and Gordon Noble</i>	
7. Dismembering bodies and atypical human deposits of the 4th millennium cal BC in the Upper-Rhine valley: Part of sacrificial practices?	92
<i>Philippe Lefranc, Anthony Denaire, Christian Jeunesse and Bruno Boulestin</i>	
8. Stone bodies between social constructions and ontology: The Copper Age statues-menhirs from the central Alps	113
<i>Claudia Defrasne</i>	
9. The Neolithic body	132
<i>Julian Thomas</i>	

Preface and acknowledgements

This volume of papers began life as the Neolithic Studies Group autumn meeting at the British Museum in 2014. The editors proposed the day as a means to survey the variety of methodological and theoretical approaches they saw arising centred on the theme of Neolithic bodies. The body has been of central interest to archaeology since the 1990s, including (but not limited to) research into its representation, its treatment after death, and the lived experience of early farmers. The editors therefore thought such a theme was long overdue to be the focus for an NSG day. The call for papers, as anticipated, attracted a number of papers centred on Neolithic funerary practices and the skeleton. Others took the body as a starting point to explore the social worlds of the Neolithic more widely, with considerations of gender, ontologies, representations and mobility explored on the day itself. The papers included in this volume survey the range of ideas and debates presented at the conference.

The editors would like to thank the NSG coordinators Tim Darvill and Kenny Brophy, as well as the British Museum and staff for support while hosting the conference. A huge debt of gratitude goes to Julie Gardiner and the team at Oxbow Books for support during the preparation of this volume.

Penny Bickle and Emilie Sibbesson
February 2018

List of contributors

ABIGAIL ASH
Department of Archaeology
University of York
The King's Manor
York
YO1 7EP
England
United Kingdom

PENNY BICKLE
Department of Archaeology
University of York
The King's Manor
York
YO1 7EP
England
United Kingdom

BRUNO BOULESTIN
UMR 5199 - PACEA
Université de Bordeaux
Bâtiment B8
Allée Geoffroy Saint Hilaire
CS 50023
33615 PESSAC Cedex
France

KENNETH BROPHY
School of Humanities
Gregory Building
University of Glasgow
Glasgow
G12 8QQ
Scotland
United Kingdom

CLAUDIA DEFASNE
Aix-Marseille Université
CNRS
UMR 7269
LaMPEA
LabexMed
BP 647
5 rue du Château de l'Horloge
13094 Aix-en-Provence
France

ANTHONY DENAIRE
Université de Bourgogne
UMR 6298-Artehis
6 Boulevard Gabriel
21000 Dijon
France

OLIVER J. T. HARRIS
School of Archaeology and Ancient History
University of Leicester
University Road
Leicester
LE1 7RH
England
United Kingdom

CHRISTIAN JEUNESSE
Université de Strasbourg
UMR 7044-Archimède
Maison interuniversitaire des sciences de
l'Homme
5 allée du Général Rouvillois
67083 Strasbourg
France

PHILIPPE LEFRANC
Institut national de recherches
archéologiques préventives
UMR 7044-Archimède
Centre archéologique de Strasbourg
10 rue d'Altkirch
67000 Strasbourg
France

GAVIN MACGREGOR
Northlight Heritage
Studio 114
South Block
64 Osborne Street
Glasgow
G1 5QH
Scotland
United Kingdom

ROGER MATTHEWS
University of Reading
Department of Archaeology
Whiteknights
Reading
RG6 6AH
England
United Kingdom

GORDON NOBLE
Department of Archaeology
University of Aberdeen
St. Mary's
Elphinstone Road
Aberdeen
AB24 3UF
Scotland
United Kingdom

RON PINHASI
Department of Anthropology
Althanstraße 14
1090 Wien
Austria

EMILIE SIBBESSON
School of Humanities
Canterbury Christ Church University
North Holmes Rd
Canterbury
CT1 1QU
England
United Kingdom

JULIAN THOMAS
Department of Archaeology
School of Arts, Languages & Cultures
Mansfield Cooper Building
University of Manchester
Oxford Road
Manchester
M13 9PL
England
United Kingdom

SAM WALSH
Independent Researcher
4 Aldersleigh Crescent
Hoghton
Preston
PR5 0BD
England
United Kingdom

Bodies, old and new

Penny Bickle and Emilie Sibbesson

The body has become a major concern for post-modern archaeologies (Rautman 2000; Hamilakis *et al.* 2002; Meskell & Joyce 2003; Joyce 2005; Sofaer 2006; Borić & Robb 2008; Robb & Harris 2013). Social theory, gender archaeology (*e.g.* Rautman 2000; Meskell 2000) and phenomenology (*e.g.* Hamilakis *et al.* 2002; Joyce 2005) have expanded definitions of the body, while the growth in bioarchaeological methods that target the skeleton capture past lifeways at ever higher resolutions (Sofaer 2006; Borić & Robb 2008; Whittle & Bickle 2013). Neolithic studies have been no exception to the growing archaeological interest in the human body and have taken, at times, the lead in opening up new research directions. This volume, building on the Neolithic Studies Group conference 2014, aims to survey some of the diversity of approaches to Neolithic bodies currently being debated.

The human body has been at the centre of many debates pertinent to studying the Neolithic, from the impact of the transition to farming on diet and health, to the ever present human remains both at settlements and associated with the funerary architecture of the period (Borić & Robb 2008; Hofmann & Whittle 2008). We wanted to acknowledge the rich array of research being carried out, and compare the conclusions from different regions and strands of evidence. The papers presented here bridge many different approaches, ranging from theoretical treatises to methodological debates and arise from those presented at the conference, representing new research stretching from the Near East to UK. We have shaped the volume around the three major themes we see among the papers published here, as well as those presented at the conference: Living bodies, the body in death, and representations of the body. The volume concludes with a discussion chapter from Julian Thomas, which sets an agenda for future studies on this theme. Overall, the papers here address the insights provided by thinking about past bodies and present the study of the body in the Neolithic as a contested site, at which overlapping research themes meet. In this short introduction, we reflect on where bodies currently sit within our debates about the Neolithic and look forward to possible future directions for research.

LIVING BODIES

The first group of papers in the volume take the lived experience of the human body in the Neolithic as their focus, asking how bodies can inform on the character of Neolithic

frontiers and worldviews. We recognise interest with the 'lived experience' of Neolithic bodies first in the arrival of post-processual archaeology during the 1980s and 1990s. Perhaps best encapsulated by the applications of phenomenological philosophy in archaeology in the 1990s, these approaches focused on how landscapes, sites and technologies would have been experienced through the body, often asking how the individual would have encountered and moved around particular landscapes or taken up and learnt different technologies (Barrett 1994; Tilley 1994; Thomas 1996; Edmonds 1999). Phenomenology was by no means the only theoretical approach to have adopted the body as a matter of concern, but some discussion of where these archaeologies focused attention is informative. Although the move towards considering the embodied approach was also captured by other contemporary works, the most prominent example of the phenomenological approach remains Tilley's (1994) *A Phenomenology of Landscape*. With this work, Tilley (1994) promoted moving away from two-dimensional plans as a means of interpreting Neolithic sites and landscapes towards considering the experience of them in three-dimensions, with the human body as the starting point. The senses, dominated by vision, were thus used to explore how past bodies met the material world. Ultimately this approach was rooted in challenging Cartesian dualism, in which the knowledge of the mind is learnt separately from bodily engagement in the world, as a specific Western and Enlightenment understanding of the body (Thomas 1996).

However, the type of bodies implicitly envisaged in this research were often oddly devoid of their own material substance, and in some ways the senses were prioritised over the body from which they arose. It was argued that such situated experiences were being interpreted through the lens of the able-bodied, in which bodily practices such as walking were considered neutral rather than arising from particular contextual social and political settings (Brück 2005). Age, sex, gender, skill, disability, temporary injury, social standing, and appropriate gesture (amongst other factors), began to be recognised as forming the variety of human bodies populating Neolithic landscapes. This led in turn to the concept of the individual as a bound whole limited only to the physical, biological body being challenged, recognising that personhood could be configured in multiple and contrasting ways, drawing in objects, places and landscapes (Fowler 2004; McFadyen 2007). These criticisms shared a growing concern with the fluidity that can be found in different forms of identity and over the life-course, and in the material of the body itself, seeing the body as lifelong project (Hamilakis *et al.* 2002). These new ideas are explored in different ways in the three papers that make up this section.

In the opening paper, Harris explores how the concept of body worlds can add new perspectives to the Early Neolithic of southern Britain. The concept of 'body worlds' was coined by Robb and Harris (2013) to express how the human body can flow beyond the biological entity into historically contextualised relationships between bodies and materials. Harris argues that this approach highlights the two bodily ontologies of flow and separation in the Neolithic. These differing but interdependent ontologies made sense of the movement of substances in food consumption, technological processes, and burial on the one hand, and the fragmentation and distinction of objects and places on the other.

The second paper, by Ash and Pinhasi, also researches the beginning of the Neolithic, but here it is 'frontier' *Linearbandkeramik* (LBK) groups in central Europe that are in focus.

The notion of the LBK as a relatively homogenous phenomenon has begun to disintegrate as recent studies highlight significant diversity in both space and time, and the study by Ash and Pinhasi is contributing to the increasingly fine-grained understanding of these Early Neolithic communities. They compare osteological stress indicators of some of the first LBK settlers in western Europe with those of more established farming groups further east. They find that even though individuals in the frontier communities were more exposed to stress than their farming neighbours in the east, they adapted better to the new economic, environmental, and social conditions that they encountered. Their paper demonstrates the significance of considering osteobiographies, examining the skeleton as remodelled over life and responding to environmental and cultural contexts, rather than a static picture at time of death.

In the final paper in this section, Sibbesson utilises the human body as a central interpretive device capable of bringing together diverse, and sometimes conflicting, lines of evidence from the British Early Neolithic. She considers how a body-centred approach to food technologies can address cooking and eating, which remain poorly understood aspects of Neolithic life. Looking at how ceramic bowls were designed to interact with the human body, the food itself, and with heat provides the details that make up broader measures of diet, such as those obtained from isotopic analysis of bone.

THE BODY IN DEATH

The second group of papers explore the contexts in which we find human remains and how they inform on Neolithic approaches to the body in death. As the most recognisable context in which the human body appears in archaeology – the skeleton – funerary practices offer a rich vein for research into Neolithic bodies. The treatment of the body after death in the Neolithic is extremely varied both across Europe and within individual regions and cultures, and rarely were human remains simply buried without further intervention or being subjected to secondary burial rites. Even in the seemingly familiar inhumation cemeteries of the LBK, evidence is found for graves being left open and the movement or removal of particular bones (Boës 2003; Thévenet 2009). Manipulating the fleshed or skeletal body was therefore a familiar practice for many Neolithic groups, and the skeletal remains of bodies may be interpreted as a form of material culture (Nilsson Stutz 2003) that participated in the shaping of Neolithic society. This line of analysis is taken by the papers in this section as they explore how the treatment of the body in death provides insight into broader social changes at the time. They argue that engagement with the corpse was transformative of social worlds, with the funerary rites magnifying concerns with particular body worlds local to the region or community under study. Thus for Brophy, MacGregor and Noble, it is group identities that were brought to the fore, while for Walsh and Matthews it is sedentism and associated Neolithic ways of life that are negotiated through the treatment of human remains. Lefranc, Denaire, Jeunesse and Boulestin investigate the possibility that sacrifice was practiced in the fourth millennium cal BC, with victims accompanying those of higher social status.

Walsh and Matthews consider one of the earliest transitions to farming in their study of Early Neolithic human remains from the eastern Fertile Crescent. One facet of the

Neolithic transition across the Middle East is intensification of burial practices, and this rich funerary record provides ample opportunity for social interpretation. Walsh and Matthews draw on fresh theoretical perspectives in their discussion of recently excavated skeletal remains from two sites in the Zagros mountains of Iran and Iraq. They suggest that the transition from life to death was a staged, participatory, and highly charged process, which in turn was crucial in the development of sedentarisation and thus the establishment of Neolithic ways of life.

The British Neolithic is in focus in the paper by Brophy, MacGregor and Noble, specifically the Late Neolithic in Scotland. Their study of cremation draws on both excavated and experimental evidence, and they highlight not only the body on the pyre but also the impact that the event would have had on living participants. They suggest that cremation pyres created 'flashbulb memories' that reinforced group identities, and that these powerful experiences contributed to the gradual establishment of cremation as a key way of disposing the dead. Seen on a larger scale, such bodily experiences ushered in the social changes that we associate with the development of the Grooved Ware complex.

In the final paper of this section, Lefranc, Denaire, Jeunesse and Boulestin present the burial practices from Michelsburg and Munzingen cultures from the earlier fourth millennium cal BC in Alsace, France. They explore different interpretations for the individuals found in unconventional or irregular body positions, raising the possibility that they had been subjected to violence, war or ritualised sacrifice. Six different ways of treating the body at death are identified, from conventional inhumation to disarticulated remains deposited without apparent ceremony. Drawing on historical and anthropological accounts of such practices, the body of a victim is argued to have been a powerful symbol and actant in displays of power and social dominance.

REPRESENTING THE BODY

The final theme of the volume focuses on the ways in which the body was depicted and represented in Neolithic and Chalcolithic Europe. The images made of human bodies in the Neolithic, such as portable clay figurines and the statue-menhirs which form the focus of the paper in this section, were part of the visual culture of the Neolithic (Bailey 2005). They formed ways of producing, engaging with and looking at representations of the body. At times these could be localised, individual and intimate to the immediate context of production and deposition, at others depictions of the body appear to abstract its forms as well as concepts related to the body, such as gender, sex or age (Knapp & Meskell 1999; Bailey 2005). In form, they range from figurative to more abstract designs that may have focused on or emphasised certain elements of the body (Robin 2012). A strong element of research into depictions of the human form in the Neolithic has been through the lens of determining experience of gender and sex. Research questions have centred on whether bodies were inherently gendered or sexed, or – as in other contexts – were the boundaries more fluid?

The paper on this theme by Defrasne focuses on the well-known Copper Age statue-menhirs from the UNESCO world heritage site of Valcamonica in the central Alps. These

statues or stele suggest the human form through their shape and where engraved images of objects usually worn, such as necklaces and belts, are placed on the surface (such as at the neck and waist). This paper explores how bodies may have been figuratively and symbolically embedded in relationships, challenging the presence of a simple male-female duality in the Copper Age. Rather, bodies were symbolised through the inclusion of material culture, particular animals, and their location in the landscape. Defranse argues against viewing these stone bodies as static representations, instead they were active and potent features of the landscape, possibly even ‘microcosms’ of Copper Age ontologies of the body.

CONCLUSION

This above discussion can only briefly survey the history and myriad approaches to the body in Neolithic studies, and focuses on those represented in this volume. However, by way of summary we offer three key directions of research into the human body that we see emerging from the papers here. First, there is the analysis of the physical body itself, investigating the impact of changing diets, health and activity on the human skeleton at the onset of farming (e.g. Spencer Larsen 1995; Pinhasi & Stock 2011). Here the body, represented by the skeleton, is not considered a static record of life at death, but the product of biologically, historically and socially-situated practice. Second, starting from the position that the biological entity of the human body is enmeshed within worldviews, shaped and informed in culturally specific ways, researchers are taking on the task of determining Neolithic views on and experiences of the body (e.g. Hofmann & Whittle 2008), or ‘embodying’ the study of Neolithic landscapes and sites. Third, the categorical definition of the body as arising from the individual flesh and bones of a human has been called into question, and researchers have been challenged to expand the definition of the body beyond its corporeal presence into material culture, architecture and animals (e.g. Bailey 2005; Miracle & Borić 2008). Harris and Robb (2013, 45–60), going further, have placed the body as central to understanding historical change and argued that during the Neolithic specific, heterogeneous and fluid ‘body worlds’ emerged. Above all, however, the Neolithic body continues to be a productive site of research interest.

REFERENCES

- Bailey, D. (2005) *Prehistoric Figurines: Representation and Corporeality in the Neolithic*. London, Routledge.
- Barrett, J. (1994) *Fragments from Antiquity: An Archaeology of Social Life in Britain, 2900–1200 BC*. Oxford, Blackwell.
- Boës, E. (2003) Comportements funéraires, modifications sociales et mentalités aux VI^e et Ve millénaires avant J.C. en Alsace. In P. Chambon and J. Leclerc (eds) *Les pratiques funéraires néolithiques avant 3500 av. J.-C. en France et dans les régions limitrophes. Saint-Germain-en-Laye 15–17 juin 2001*, 33–43. Paris, Société Préhistorique Française.
- Borić, D. and Robb, J. (2008) Body theory in archaeology. In D. Borić and J. Robb (eds.) *Past Bodies: Body Centred Research in Archaeology*, 1–7. Oxford, Oxbow Books.
- Brück, J. (2005) Experiencing the past? The development of a phenomenological archaeology in British prehistory. *Archaeological Dialogues* 12, 45–72.

- Edmonds, M. (1999) *Ancestral Geographies of the Neolithic: Landscapes, Monuments and Memory*. London, Routledge.
- Fowler, C. (2004) *The Archaeology of Personhood: An Anthropological Approach*. London, Routledge.
- Hamilakis, Y. Pluciennik, M. and Tarlow, S. (2002) Introduction. In Y. Hamilakis, M. Pluciennik and S. Tarlow (eds.) *Thinking Through the Body: Archaeologies of Corporeality*, 1–21. London, Kluwer academic and Plenum Publishers.
- Hofmann, D. and Whittle, A. (2008) Neolithic bodies. In A. M. Jones (ed.) *Prehistoric Europe: Theory and Practice*, 285–311. Oxford, Wiley-Blackwell.
- Joyce, R. A. (2005) Archaeology of the body. *Annual Review of Anthropology* 34, 139–158.
- Knapp, B. and Meskell, L. (1999) Bodies of evidence on prehistoric Cyprus. *Cambridge Archaeological Journal* 7, 183–204.
- McFadyen, L. (2007) Making architecture. In D. Benson and A. Whittle (eds) *Building Memories: The Neolithic Cotswold Long Barrow at Ascott-under-Wychwood, Oxfordshire*, 348–54. Oxford, Oxbow Books.
- Meskell, L. (2000) Writing the body in archaeology. In A. E. Rautman (ed.) *Reading the Body: Representations and Remains in the Archaeological Record*, 13–21. Philadelphia, University of Pennsylvania Press.
- Meskell, L. and Joyce, R. A. (2003) *Embodied Lives: Figuring Ancient Maya and Egyptian Experience*. London, Routledge.
- Miracle, P. and Borić, D. (2008) Bodily beliefs and agricultural beginnings in Western Asia: Animal-human hybridity re-examined. In D. Borić and J. Robb (eds) *Past Bodies: Body Centred Research in Archaeology*, 101–13. Oxford, Oxbow Books.
- Nilsson Stutz, L. (2003) *Embodied Rituals and Ritualized Bodies: Tracing Ritual Practices in Late Mesolithic Cemeteries*. Acta Archaeologica Lundensia, Stockholm, Almqvist and Wiksell Intl.
- Pinhasi, R. and Stock, J. T. (eds.) (2011) *Human Bioarchaeology of the Transition to Agriculture*. Oxford, Wiley-Blackwell.
- Rautman, A. E. (ed.) (2000) *Reading the Body: Representations and Remains in the Archaeological Record*. Philadelphia, University of Pennsylvania Press.
- Robb, J. and Harris, O. J. T. (2013) *The Body in History: Europe from the Palaeolithic to the Future*. Cambridge, Cambridge University Press.
- Robin, G. (2012) The figurative part of an abstract Neolithic iconography: Hypotheses and directions of research in Irish and British passage tomb art. In A. Cochrane and A. Jones (eds.) *Visualising the Neolithic: Abstraction, Figuration, Performance, Representation*, 140–160. Oxford, Oxbow Books.
- Sofaer, J. R. (2006) *The Body as Material Culture: A Theoretical Osteoarchaeology*. Cambridge, Cambridge University Press.
- Spencer Larsen, C. (1995) Biological changes in human populations with agriculture. *Annual Review of Anthropology* 24, 185–213.
- Thévenet, C. (2009) Les sépultures rubanées du Bassin parisien: composition de l'échantillon funéraire et implantation sépulchrale. In A. Zeeb-Lanz (ed.) *Krisen — Kulturwandel — Kontinuitäten: Zum Ende der Bandkeramik in Mitteleuropa*, 111–27. Rahden, Marie Leidorf.
- Thomas, J. (1996) *Time, Culture and Identity: An Interpretive Archaeology*. London, Routledge.
- Tilley, C. (1994) *A Phenomenology of Landscape: Places, Paths and Monuments*. Oxford, Berg.
- Whittle, A. and Bickle, P. (2013) Performing LBK lifeways. In P. Bickle and A. Whittle (eds.) *The First Farmers of Central Europe: Diversity in LBK Lifeways*, 385–401. Oxford, Oxbow Books.

Both permeable and partible: Exploring the body world of Early Neolithic southern Britain

Oliver J. T. Harris

The body is a critical vector for understanding any period of the past. It lies at the centre of phenomenological experience, it is a material entity which reveals and creates history, it is an actor that forges and is forged by the relationships in which it is enmeshed. The body is simultaneously material and ideal, object and subject, real and imagined; indeed it reveals the instability and inadequacy of such dualisms. From conception, through to death and beyond, it plays a central role in the worlds in which past and present people dwell. As archaeologists, our attention when considering the human body has been drawn primarily towards skeletal remains, and no wonder when they reveal so much both about understandings of death, but also the lives that people have lived, whether in the isotopic profiles that tell us about diet and mobility or in the altered muscle attachments that reveal patterns of work and rest. Yet the richness of the body means that it transcends these moments to interweave itself into every nook and cranny of the past, from the building of a barrow to the digging of a flint mine, from polishing an axe to shooting an arrow. To think about bodies, therefore, we need to think beyond the confines of the physical to the wider *body world* that produces, and is in turn produced by, the bodies we study (Robb & Harris 2013). Rather than solely a biological entity the body is instead a complex and multiple assemblage (Harris 2016a).

In this paper I want to explore these issues within the Early Neolithic of southern Britain across a few centuries between about 3750 and 3500 cal BC; the period of causewayed enclosures and some chambered tombs and long barrows, of the start of the widespread trade of polished stone axes and the movement of decorated pottery (Whittle *et al.* 2011). As noted above, when you start looking for it, the body intertwines itself into every crevice of our evidence, and so this account will necessarily be short and synthetic; much more can be said about each of the areas I will discuss. Having briefly reviewed previous discussions of the body in this period, I will outline the concept of the body world to consider how the body emerged through engagements with death, materials, movement, spaces and violence. I will argue that at least two differing aspects of bodies were foregrounded in Early Neolithic southern Britain. These emphasise separation and partibility on the one hand, and flows and permeability on the other (Fowler 2004a; *cf.* Fowler 2004b; 2008; 2016). These differing modalities, these differing ontologies (Harris & Robb 2012), co-existed, and at different times differing materials, people, animals and places helped to constitute them

both. Rather than just the relationship between parts and wholes (*cf.* Chapman & Gaydarska 2007), therefore, it is the constitution of parts and flows that I will suggest is critical.

THE BODY IN NEOLITHIC BRITAIN

Interest in the body as an interpretive device, rather than simply an object recovered through excavation, has grown in archaeology since the mid-1990s across a wide array of contexts and from different theoretical positions (for reviews see Hamilakis *et al.* 2002; Borić & Robb 2008). Notable examples from work on Neolithic Britain include the phenomenological analysis of Christopher Tilley (1994), Julian Thomas (1996) and later Vicki Cummings (2002), which placed the body at the centre of our analysis. Similarly Gavin Lucas (1996) looked at how the body was treated in death in Neolithic and Early Bronze Age Yorkshire, Chris Fowler (2001; 2002; 2003; 2010) has examined the critical issue of personhood, and Alasdair Whittle (2003, 25–39) looked at the body as part of the daily round in different European Neolithic contexts. More widely scholars like Paul Treherne (1995), and Lynn Meskell and Rosemary Joyce (2003) examined the body as a category of analysis in itself in Bronze Age Europe, and Classic Mayan and Ancient Egyptian contexts respectively.

Although corporeality was central to the phenomenological analysis of Tilley in particular, the body this approach drew on was not in itself critically considered (Brück 2005). As Joanna Brück (2005) has rightly pointed out, the body Tilley relied upon was an ahistorical and universal entity. It was the shared biological nature of the body, Tilley (1994, 74) explicitly suggested, that allowed him to access experiences of landscapes that contained Neolithic monuments not as metaphor or as analogy, but much more immediately. Since the 1970s, however, social theorists have been aware that the body is not simply a transhistorical natural entity, but rather something that emerges in different ways in particular times and places. Michel Foucault (1977; 1978), the most famous proponent of this view, showed how, historically, particular kinds of bodies emerged through the internalisation of certain norms of discipline and identity during the Early Modern period. Similarly, in more modern contexts, Judith Butler (1993) has examined how particular kinds of bodily performance materialise certain kinds of identity, and construct norms – regulatory ideals – that people attempt to live up to. Indeed, anthropological analysis from numerous contexts has shown how bodies can be understood very differently around the world today, emphasising that modern western constructs of identity, personhood and gender need not be the same in the past as in the present. The work of Marilyn Strathern (*e.g.* 1988) has been especially influential here. Although many of these approaches have been criticised for ignoring the material aspects of bodily identity, they nonetheless provide an unanswerable critique to claims that we can start with any form of ‘natural’ baseline shared between past and present.

It is these latter set of issues that influenced the critical work on personhood and the body in Neolithic Britain in the 2000s, notably that of Thomas (Thomas 2000; 2002) and Fowler (2001; 2002; 2003; 2004b; 2008). For example, Thomas (2002, 41), drawing principally on the anti-humanism of Heidegger and Foucault, though also on Butler and Strathern, argued that the regular occurrence of disarticulated bodies in the Neolithic suggested that human bone circulated through exchange relationships. Human bodies,

Thomas (2002, 41) suggested therefore, were partible. That is to say that people understood the body in such a way that they could be separated into different elements (whether they are alive or dead) which might then be exchanged and become parts of other people (Fowler 2004a, 9). Fowler (2001, 152), with Strathern as the main – though not only – source of inspiration, examined the Isle of Man and argued that the treatment of remains at the likely chambered cairn of Ballaharra revealed ‘the integration of different selves’. More broadly, he also developed a nuanced account of how processes of exchange and decay could be linked to the treatment of the body (Fowler 2003), and incorporated the wider world of materials such as water and quartz at chambered tombs into this analysis (Fowler 2008; Fowler & Cummings 2003). Partibility of both the body and the self remains dominant in this account, but Fowler also explores the way in which substances might flow between bodies as well (Fowler 2004b, 95–6; 2008, 54–5). For both Thomas and Fowler, what was central to the arguments they proposed was a rejection of the notion that the bounded individual was a human universal, and the suggestion instead that alternative modes of personhood would have been at work in the Neolithic. Although accused of giving the Neolithic a ‘Melanesian flavour’ (Jones 2005, 195), it is clear these insightful and influential arguments made a big impact in opening up the body as a site of critical analysis in debates about the Neolithic. The suggestions made by Fowler and Thomas will remain central to the arguments developed below.

A decade or so on from some of these papers, however, we can now identify a number of ways to build on and develop these important arguments. First, and unsurprisingly, we have new information to feed into these accounts. In particular, the redating of causewayed enclosures and other sites by Whittle, Bayliss, Healy and others (Whittle *et al.* 2011) opens up new opportunities for specific accounts of everything from the Mesolithic/Neolithic transition (Thomas 2013) to the senses of anxiety potentially present at the gatherings at causewayed enclosures (Harris 2016b). Second, as I have argued elsewhere, as important as the personhood critique is, it does not fully escape the humanism it was explicitly designed to challenge (Harris 2016a). Third, although both Fowler and Thomas discuss the body more widely than simply its treatment in death (see for example Fowler 2003, 48–50; Thomas 2002, 40–41), this still forms the primary strand of analysis for both (Fowler 2008, 53). This means there is more to be gained from thinking through the arguments for bodily relations and practices beyond the funerary sphere, as Fowler (2010, 18) has urged us to do. For example, the work done by McFadyen (2007) on the intimacy of bodily engagement with the building process suggests other avenues for exploration.

FROM BODIES TO BODY WORLDS

To address these latter two areas we need to say a little more about the critical concept of body worlds. This concept was developed as part of a long-term history of the human body (Robb & Harris 2013). Body worlds capture the way in which the body emerges from multiple lines of relationships and axes of identity, they are the assemblages of historically situated practices, materials and relationships that are productive of and produced through bodies. Bodies emerge through the food we eat and the way we eat it,

through our relationships with people and other animals and how we understand them. They emerge through the way we mark the body and depict it, through the manner in which we divide up space and how we shape the body as we do so. They emerge in how we think about substances, bodily and otherwise, and the way in which things shape our muscles and our minds even as we shape them in turn. Such an approach allows us to resist either reducing bodies to a natural substrate, a shared organism, or declaring that they are simply ‘socially constructed’ as if the material world had no role to play. These body worlds are fundamentally *ontological* in that they are about what bodies can do and what bodies are, not simply about what we think or what we believe (*cf.* Harris & Robb 2012; Harris 2016a). Today the body world resides in our patterns of work and our interaction with technologies, in our abilities to use transport and to navigate the internet, in our insistence both on the specificity of each individual but also our essential sameness, how cultural expression lies on top of, or disguises, natural unity as a species underneath (Robb & Harris 2013). As already noted, anthropologists have recognised for a long time what a historically specific way of having a body this is.

What turning to body worlds means is that the body in the Neolithic will not emerge simply from studying the treatment of the dead alone, though of course this remains an essential part of our evidence. It lies throughout the worlds we encounter from a simple flint tool to a complex monument. In what follows I want to explore some of the elements of the Neolithic body world in the centuries around 3600 cal BC. To do so I want to consider five different, though nevertheless intersecting and overlapping, areas. These are death, materials, movement, spaces and violence. Drawing on earlier accounts I will suggest that although the partible body was clearly important to the Neolithic of this period, it formed only one element of a complex mixture of ways in which bodies existed; a mixture that people, materials, animals and places helped to constitute.

THE BODY AND DEATH

As so much of discussions of the body in archaeology starts with death, this makes a good place for us to begin our tour of the Neolithic body world as well. As noted above, much of the discussion of Early Neolithic funerary practice has focused on the disarticulation of the body and its potential partibility. Examining the treatment of remains at West Kennet chambered tomb in Wiltshire, for example, Thomas suggested that bodies were deliberately ‘disaggregated’ (Thomas 1999a, 206; 2002). At many funerary sites across southern Britain we undoubtedly do see the deliberate disarticulation of the dead. The long barrow of Fussell’s Lodge for example, probably constructed in the first half of the 37th century cal BC, featured not only the deposition of remains that had been previously deposited elsewhere, but also the recombination of the parts of different bodies into a single whole (Wysocki *et al.* 2007). The separation of bodies also facilitates their recombination; the possibility for a body to be broken down into its constituent parts, its constituent relations, and recombined with others. Here the existence of a partible body in life is revealed in death (*cf.* Fowler 2001). However, one of the interesting things about the redating and re-examination of the treatment of bodies at long barrows and chambered tombs is that

the incorporation of older remains from elsewhere may actually be quite rare (Whittle *et al.* 2007a, 132–3). At other sites, such as the chambered tombs of Hazleton North, Gloucestershire, or Ascott-under-Wychwood, Oxfordshire, it was whole bodies that were deposited, only to be disarticulated as they were pushed back in the linear chambers away from the front of the tomb where they were first interred (Benson & Whittle 2007; Saville *et al.* 1990).

Fowler's (2010) exceedingly useful recent summary of the range of Early Neolithic funerary practices emphasises this variety, as does the work of Smith and Brickley (2009) looking at the treatment of the dead in long barrows specifically. In the Early Neolithic we not only encounter disarticulated bodies, but also examples that are partially articulated or cremated, as at Sale's Lot in Gloucestershire (Smith & Brickley 2009, 58). Sometimes we find remains of a single intact individual in a grave by themselves, as at Pangbourne, Berkshire (Piggott 1929), or located in enclosures of various sizes (e.g. Mercer & Healy 2008). On occasion bodies are accompanied by grave goods, but usually not (Fowler 2010). Much of this activity also happened at specific times and in specific places; for example, the deposition of bodies at West Kennet took place most likely over a single generation (Bayliss *et al.* 2007). At the long barrow of Wayland's Smithy I, Oxfordshire, the burials may even represent a single event, perhaps the results of a massacre (Fowler 2010; Whittle *et al.* 2007b). At other times, however, the specifics of certain practices are remembered over long periods of time, such as with the deposition of two very similar children at the causewayed enclosure of Hambledon Hill in Dorset at least 170 years apart (Harris 2010; Mercer & Healy 2008).

It is clear that variety is central here. Perhaps rather than partibility alone, therefore, especially with its ethnographic and potentially generalising connotations (*cf.* Brittain & Harris 2010), we might be better off thinking of these practices as being caught up in an ontology of separation, of which the partibility of the body was one, admittedly often critical, element. The body could be separated from itself in acts of disarticulation, separated from the community within monuments, and separated from the world in sealed single burials. Similarly separation also implies the potential for recombination (*cf.* Fowler 2001, 158), both in the manner in which the chambers of monuments allowed bodies with 'varying histories' to be combined (Whittle 2007, 359), and within specific deposits that bound bodies of more than one person together including at Fussell's Lodge as we saw above, but also at sites like Pipton in South Wales (Wysocki & Whittle 2000, 596). Thomas (2000, 663) identifies the separation of the living and the dead as a growing theme in the Late Neolithic. In this context we can now reimagine this as an increased emphasis on one element of the broader ontology I have identified here, and trace its genealogy back to this earlier period.

It is difficult, even having broadened out from the single analogy implicit in partibility, however, to reduce all the treatments of the body to a single theme. The ontology of separation I have proposed here, and will return to below, may only have operated in a specific way, in specific contexts, and potentially in relation to particular kinds of events or particular kinds of people. Rather than a catch-all word for the body, it is instead a term that emphasises one particular quality of the body world. We can also trace a second theme emerging here, however. This relates to the permeability of the body, its capacity for decay,

for substances to flow from it in death as it leaked and rotted (*cf.* Fowler 2003, 52; 2008, 54). When bodies rotted in public, as at Hambledon Hill (Mercer and Healy 2008), or in the open grave that would later be cut by the outer circuit of the Windmill Hill causewayed enclosure in Wiltshire (Whittle *et al.* 1999), people would see this transformation openly. Here and elsewhere the transformation of the body was not denied in Neolithic Britain, but it was on occasion controlled. Sometimes the body might be shut away within a container, whether grave or chamber, other times more active measures could be taken. This involved allowing animals to gnaw at the flesh in a controlled manner, as at the chambered tomb of Adlestrop in the Cotswolds (Smith & Brickley 2009, 42–5), or the deliberate defleshing of bodies and the washing and drying of skulls at Hambledon Hill (McKinley 2008). Containing the body may have prevented these substances from entering wider circulation, even as it prepared to reveal what lay underneath. The hard, fragmented, material that bone became, as it was dried and cleaned, contrasted with the mess of flesh, skin and organs that surrounded it (*cf.* Bloch 1982; Fowler 2010, 18). As this leaked into soils, was eaten by animals, or burnt and rose to the sky, the flow of these substances would have been tangibly materialised. In death then, the treatment of the body reveals at least two different qualities, the partibility of bone and the permeability of flesh. Thus I would propose a second ontology, one of flow, needs to be paired with that of separation, if we want to tease out the full range of complexities inherent in the body world of Neolithic southern Britain. This builds on and develops the ideas of permeability that Fowler (2004b, 96; 2008, 55) has identified. Whilst circulation is important to both of these perspectives, as Thomas (2002, 42; *cf.* 1999b) rightly notes with regard to partibility, there is a critical difference. Within an ontology of separation, I suggest, specific elements of the body could be identified and separated, recognised and exchanged. This suited the hard materiality of human bone. Within an ontology of flow there is no beginning and no end, just a flow of becoming from one context to the next where boundaries are never clear and mixtures predominate (*cf.* Fowler 2004a, 9).

THE BODY AND MATERIALS

Bodies emerge in a world of materials. This includes the flesh and bone we have mentioned already, but of course reaches out beyond this to include all manner of other things: clay, stone (of many different kinds), antler, earth, wood, plant material, animal bone, shell, blood, water, milk and turf. Each of these materials comes to shape the body as much as the body shapes them. As people knap flints so muscle attachments grow and bones change shape (*cf.* Sofaer 2006). As water is drunk so particular isotopic signatures bind themselves into the fabric of the body. The skills learnt and mastered with a host of materials would become central elements of the way in which bodies could reach out and affect the world around them. Some of these interactions left visible markers, as on the bodies at the chambered tomb Ty Isaf in Wales, where Wysocki and Whittle (2000, 592) have suggested that twine or other material may have been held in the mouth leaving a groove in one case, and perhaps leading to tooth loss in others.

One of the principal ways in which body worlds work is that this broader suite of materialising practices offers people the opportunity to conceptualise and explore their

bodies differently. Today computers offer us modalities of hardware and software for our brains. Similarly in the Early Modern period, it was the existence of pumps, levers and watches that people drew on to describe the body as a machine for the first time (Robb & Harris 2013). Such comparisons are more than just metaphors; different forms of description create different possibilities for action and so redescribing the body as a machine offers new potential to conceptualise medical treatments for example (Robb & Harris 2013). In the Neolithic, all of the different materials listed above would have created opportunities for different links to be created and new possibilities for bodies to emerge. Here with the constraints of space I want to discuss just two brief examples: polished stone axes and pottery.

Stone axes have often been viewed as the prestige item *par excellence* of the British Neolithic, although recent interpretations have moved away from seeing them purely as loci of power and more as being tied in with ideas of biography, memory and pilgrimage (Bradley & Edmonds 1993; Price 2007). Thanks to the redating of the Early Neolithic, we can now also closely associate their widespread trade with the intensification of enclosure construction in the 37th century cal BC (Whittle *et al.* 2011, 801). These associations with long-distance connections, memory and biography are not side issues to those of the body; rather they are central to the ways in which these axes acted as critical elements within the body world. Not only would axes have stood as elements of a place far off, now transported to a new location (Thomas 1996, 154), they would also have gathered to them relationships with the differing people they had encountered, the stones against which they had been polished, the acts in which they had been used. Just as bodies were made out of relationships with the world around them so too were axes, thus axes in the Neolithic of southern Britain can be thought of as analogous to the human body as Thomas has suggested (2000, 660; 2002, 41). They moved from place to place, they interacted with other materials, they could be fragmented in death, as took place at the causewayed enclosure of Etton in Cambridgeshire (Edmonds 1998, 262), or preserved and curated for long periods of time. After death these fragments could be recombined with the parts of other axes. At Hambledon Hill, in the phase VI recuts of segment 10 in the main enclosure, two joining fragments of a greenstone axe were placed along with fragments of a ground axe and a flint axe (Mercer & Healy 2008, 83). Here the breakdown and recombination of materials can be thought of as a form of mimesis of the acts that took place with bodies on the site (*cf.* Fowler 2003, 49). There is a clear relationship between axes and enclosures; they may well have been a locale where these items were exchanged, and these moments where axes and, perhaps, people moved between groups formed part of the ontology of separation I identified earlier. Here thinking of both bodies and communities as assemblages made up of more than just people (Harris 2014a), allows us to consider how these moments of separation operated equivalently.

Central to the way in which axes and people engaged through these forms of divisible, bodily relations, was the materiality of the axes themselves. The very hardness of the axe suits long-term connections. The axe is unlikely to break by accident, and even if through use and wear it might become damaged, it can be reshaped, reworked and preserved. The combination of persons within the axe, and the passing of the axe from person to person can thus be maintained because of the axe's material capacities. This creates long-term

relationships between people, perhaps over a span greater than any one person's lifetime. The axe preserves, curates if you will, the relations in which it is enmeshed, it allows these relations to endure (Fowler & Harris 2015).

If axes, in one sense at least, formed part of an ontology of separation, then something quite different was taking place with pottery. Where axes endured through their materiality pots were fragile and friable. Of course this did not mean they could not travel and move; we know pottery made from gabbroic clay from Cornwall travelled up to the causewayed enclosures of Wessex, forming 9.1% of the excavated assemblage at Maiden Castle and a smaller 1.2% at Hambledon Hill (Sharples 1991, 254; Smith 2008, 587). Nevertheless, differing relations of care would have been present from the very start, in order for pottery to survive and work, let alone to travel across the landscape. Rather than an emphasis on parts, and partibility, therefore, from its first shaping the emphasis with pottery may have been on the notion of flow. Clay itself is a substance that can be made to flow, can be wetter or drier, can absorb different materials into it and change its properties. Here again we can see parallels with human bodies, although in different ways to axes, with the way in which they consume and digest flows of substance. Solids and liquids meld together in the human body as they would have melded together inside the pots as they were heated over fires. Both bodies and pots were containers of substances (Fowler & Cummings 2003, 13), but more than this they are both sites through which substances flow and emerge transformed. We know now that many Early Neolithic pots were used to contain dairy fats (Copley *et al.* 2005). Of the sherds examined from both enclosures at Hambledon Hill 26% contained dairy fats, and a further 67% had contained a mixture of dairy and adipose fats (Copley *et al.* 2008). This knowledge extends the permeable links through people to animals, and through them to people's wider daily lives and their movement around the landscape. Thus although the pots were short-lived in themselves, they tied people together and linked their lives and landscapes through the flow of substances from land, to animal, to pot, to person. The capacities of clay, and the properties of pottery, contributed themselves to the shaping and understanding of Neolithic bodies (*cf.* Harris 2014b).

Of course the distinctions between pots and axes are not absolute. Axes might be seen as the containers of flows of substance. The marks they left on the stones against which they were polished might have indicated the transfer of substance from one to the other. Indeed it is little wonder that such stones were sometimes incorporated into monuments at sites like West Kennet (Piggott 1962). Similarly the break-up of a pot might allow it to be understood in a partible fashion (Thomas 2002, 41). Whilst most of the time, and in many contexts, the dominant understandings of a pot might emphasise flows and of axes emphasise separation, these could be reversed within particular moments of encounter, debate and exchange.

THE BODY AND MOVEMENT

This discussion of materials begins to make us focus on movement. Substances moved and flowed between animals, people, pots, between rivers and the sea. Of course these movements were often in conjunction with the movement of human bodies as well. Movement is critical to how we think about the body because it is central to the fact that

bodies are always in the process of movement (Sheets-Johnstone 1999). From the gestures that make up the intimate moments of bodily encounter, to running across landscapes, from engaging with architecture, to making material culture, the body is always moving. These movements, of course, are not merely mechanical but deeply meaningful, loaded with specific histories and traditions, choreographed in specific ways (Bourdieu 1990, 69–73; Whittle 2003); these are the techniques of the body that mark out who a person is and where they have come from (Mauss 1973 [1935]).

So what can we say about the movement of Neolithic bodies? Movement was clearly an important and regular part of life in Neolithic Britain in the centuries we are concerned with here. Although some people built houses that may well have been occupied all year round, such as at Horton in Berkshire, where five possible houses have been excavated (Chaffey & Brook 2011; cf. Barclay & Harris 2017), we have evidence that a more mobile lifestyle may also have been common amongst some groups (as suggested by Barrett 1994; Edmonds 1999; Thomas 1999; Whittle 1996 *inter alia*). Indeed regional variation may be becoming apparent here. Recent analysis of stable isotopes on the teeth of individuals interred at Hazleton North, first constructed probably between 3690 and 3650 cal BC (Meadows *et al.* 2007, 53), has shown that the majority of people followed a pattern of multiple, routine, movements within their life times over considerable distances, at least 40 kilometres (Neil *et al.* 2016). These movements reveal the flow of bodies around the landscape, following paths to specific places, a process of becoming as Barrett (1994, 136) referred to it more than 20 years ago. Just as the pattern of people's engagements with material things gives them tools to think with about their bodies, so do patterns of movement, and our ontology of flow seems important again here.

Alongside people moved the animals with whom they shared their lives (Pollard 2006; Whittle 2003). The contrast between this and the plants which remained more rooted to the landscape must have been clear. These latter organisms could be separated and parted from the world, their seeds picked up and scattered elsewhere, but they did not move with people in the same way animals did. Ray and Thomas (2003) have discussed the evocative comparisons people may have drawn between their own communities and the communities of cattle they lived with, and bodies too seem to have been compared and contrasted at differing times. At Hambledon Hill, for example, in segment 6 of the ditch of the inner Stepleton outwork, parts of a cattle pelvis were found lodged in a fissure alongside the head and shaft of a left adult human femur (Mercer & Healy 2008, 242). Were we to stretch the dates of the period we are looking at here a little we could add the placement of cattle skulls within long barrows at sites like Beckhampton Road long barrow in Wiltshire (Kinnes 1992, 32), or the famous insertion of the child's femur into the cattle humerus from the inner ditch at Windmill Hill (Whittle *et al.* 1999, 110; Harris 2011). Both probably date to a little after the period under consideration here (Whittle *et al.* 2011, 69, 105). Nonetheless they hint at wider interrogations of the relationships between people and animals. People and animals would have been exchanged between groups, emphasising the divisible qualities of these communities, and these separable and recombinable relations could then be explored with the material qualities of the bones themselves. Simultaneously, of course, eating meat and drinking milk would have been central to the relations between human and animal bodies (Whittle 2003, 30), and here we can detect flows of substance once again.

Bodies themselves also tell us about another scale of movement and interaction. In their close study of human remains from contexts in Neolithic southern Britain, Wysocki and Whittle (2000) show how the body itself is shaped through its movements through the world. Here elements of the Neolithic body world that were gendered begin to emerge. At West Kennet, evidence suggests that some males ran and jumped more than females did, although both groups took part in strenuous activity (Wysocki & Whittle 2000, 595). At the same site the authors trace differences in the kinds of arm movements commonly made by different genders, suggesting women may have made more movements involving the extension and rotation of both forearms, as opposed to movements that focused on the right shoulder in men (Wysocki & Whittle 2000, 594). Whilst such activities may have been caught up in food processing as the authors suggest (Wysocki & Whittle 2000, 595), one could also imagine such motion being produced through things like the intense work required to polish stone axes, perhaps linking women closely to this form of material culture.

BODIES AND SPACES

This discussion of movement and materials can be brought together in a consideration of the relationship between bodies and the different spaces that they occupied. It has long been recognised by Neolithic archaeologists that different kinds of spaces structure movement differently (Thomas 1993; Tilley 1994). We can think of the small cramped spaces inside chambered tombs, or the manner in which houses created specific spaces. Across the landscape too, the spread of movement and activity, the taskscape of Ingold (Ingold 2000) and Edmonds (1997), was shaped by the rhythm of bodily activities. McFadyen (2007; 2008) has shown how people make these spaces through building, and in so doing make themselves. Spaces can allow free movement, or restrict it, in terms taken from another discourse they can be smooth or striated, and so have different kinds of movement within them, and boundaries on their edges (Deleuze & Guattari 2004).

How can we link this back to the body? The critical realisation once again is that the body emerges through the process of inhabiting these spaces. Space and the body *become* together in the world through the manner in which bodies are orientated by space, and in turn come to shape and texture that space through experience. Orientations are about the intimacy of bodies and their dwelling spaces, indicated in the way places touch us and affect us, the way they provoke affective and mnemonic responses that are as much bodily as anything else (Harris 2009; 2010; 2016b; Harris & Sørensen 2010). To quote the cultural theorist Sara Ahmed (2006, 9) ‘given the history of such responses, which accumulate as impressions on the skin, bodies do not dwell in spaces that are exterior but rather are shaped by their dwellings and take shape by dwelling’. In historical contexts we can trace how just as nation states emerged as bounded entities so bodies too became increasingly disciplined and bounded, state government and self-government emerging side by side (Foucault 1978). Similarly, as houses in the Early Modern period became increasingly divided up with specific internal rooms for specific purposes, so bodies too became increasingly anatomised with specific organs serving certain functions (Johnson 1996; Robb & Harris 2013). So what kinds of spaces were emerging in the period around 3600 cal BC?

The obvious example here is causewayed enclosures. These sites, made up of interrupted ditches of one or more circuits, became very popular across southern Britain during this period. Moving into and through causewayed enclosures would offer people different ways of conceptualising the boundaries of the site, and thus the boundaries of their own bodies. On the one hand the gaps in the enclosure ditch acted to allow different substances, people and animals to permeate it, to flow into it across the causeways. These were important moments, ones often accompanied by acts of deposition into the ends of the ditches on either side, like the cattle skulls in this position at Windmill Hill (Whittle *et al.* 1999) or the specific pottery types deposited at the entrance to the Stepleton Enclosure in Dorset (Mercer & Healy 2008). The boundary of the site thus acts as a guide for these threads of movement, leading them into and out of the enclosure, orientating people to certain places and shaping their bodies through these orientations. Flows are emphasised here once again.

These are only one set of lines, however, one set of orientations at causewayed enclosures. We can also trace connections along, rather than through, these ditches. The boundaries of the site were not simplistic divisions between inside and outside, but rather complex orientating devices that created surfaces which people encountered in particular ways and from particular directions. At Hambledon Hill this movement was extended beyond the enclosure itself and incorporated the way the palisades and topography guided people between the two different enclosures. Moving alongside the ditches people could place and inspect linear spreads of material. To give one example from the site, the deposits in phase III of segment 4 included spreads of pottery, and human and animal bone with clear and explicit links to older deposits (Mercer & Healy 2008, 68). Similarly, the detailed excavations of sites like Etton have traced these complex deposits in as they run along different ditch segments incorporating pots, animal skulls and deliberately selected and positioned stones amongst other things (Pryor 1998, 30–4; *cf.* Harris 2017). Rather than focusing on how substances flowed into and out of a specific space, here particular elements were laid out along specific surfaces, emphasising their relationships with one another, their separation from other deposits at the site, and the manner in which such practices created particular forms of association. Parallels with aspects of the body can be drawn once again.

THE BODY AND VIOLENCE

There is one final element of the body world of Neolithic southern Britain that I would like to draw attention to here, and that is the role of violence. In recent years there has been an increasing awareness of the role of violence within Neolithic Britain (*e.g.* Mercer 1999; Schulting & Wysocki 2005; Thorpe 2006; Smith & Brickley 2009; Schulting 2012). This violence takes different forms from shooting with arrows to the infliction of both lethal and non-lethal trauma upon the body with a variety of tools. Schulting and Wysocki (2005, 122) in examining 350 Neolithic ‘composite’ skulls identified cranial trauma on 8.9% of them (31) of which 2.9% had no evidence of post-infliction healing, and thus were certainly fatal. Even allowing for misdiagnosis, Schulting and Wysocki (2005, 122) still offer a conservative figure of 5–7% of skulls showing cranial trauma. More recent research on northern British examples by Schulting (2012, 229) shows an even higher occurrence there.

Fascinatingly they also demonstrated that the fatal blows were much more likely to occur on the left hand side of the skull, indicating they may have taken place in quite formalised settings of face-to-face combat (Schulting & Wysocki 2005, 123). In contrast the healed blows were far more randomly distributed and thus likely to have taken place in a different context (Schulting & Wysocki 2005, 129). The evidence from victims of arrowshots also suggests that different forms of violence took place. We know major assaults took place at the causewayed enclosures of Crickley Hill (Dixon 1988) and Hambledon Hill (though what we mean in socio-political and military terms by ‘major assault’ probably needs some critical thought), and the latter case, at least, very likely led to the death of two individuals by arrowshot (Mercer & Healy 2008, 761). Elsewhere Smith and Brickley (2009, 106) have suggested that the angle and direction of wounds caused by arrowheads indicates these took place in ambushes or surprise attacks.

Doing justice to the kinds of embodied relations we can trace here would be an article in itself. There are, however, a few things worth emphasising. The first is the way in which these different forms of violence both acted upon bodies and allowed bodies to act. Violence, in both its presence and absence, is a critical vector of all body worlds because it is fundamentally focused on and carried out by bodies; and like bodies, violence is both performed and performative (Riches 1986, 3; Schröder & Schmidt 2001, 6). Thus we cannot understand body worlds unless we make room for violence, and the reverse is also true: we cannot hope to understand the historically contextual nature of violence, unless we critically appraise the role of the body. In this context we can detect the evidence for bodies moving and interacting with one another differently, of moments of set and formalised combat, of more random violence, of bodies moving silently or attacking wildly. Speculatively, we can link these different forms of violence back to our wider discussion. Close, interpersonal, violence represents a flow of force, of intensity, from one body to another marking those bodies as different. Sometimes bodies we know were repeatedly marked in this way, as in a male from Fussell’s Lodge who had three healed fractures on the right-hand side of the skull (Schulting & Wysocki 2005, 118). We can detect how different material things mediated these bodily encounters with clubs, axes and antler picks allowing bodies to impress themselves onto each other in skilled but painful, violent and sometimes fatal ways. These speak to the flows we have seen elsewhere. Perhaps something different can be detected with the longer distance of ranged combats. Here we can think about how arrows might leave one body to join with another; in contrast in more direct encounters no gap can be detected at the moment of impact. In both cases these encounters are immediate, emotional, affective and material; they form bodies as permanently different and mark a critical change in the identity of the people and things involved. Nonetheless they may point to different understandings of how bodies worked and how they interrelated.

CONCLUSION: PARTS AND FLOWS

This has been a whistle-stop tour through the body world of Neolithic southern Britain. I have had little room to dwell on the role of bodies in the actual acts of construction,

or in the daily rhythms of milking and knapping, of grinding plants and gathering water. Even within the areas I have touched on much more could be said about the detail and variety of practices and the ways these manifest within wider understandings of the body. Nevertheless, themes have begun to emerge that allow us to consider the Neolithic body world in different ways. Primarily I have argued that two differing bodily ontologies co-existed in this period. On the one hand we can emphasise an ontology of flow. This brings together the way substances moved between places, animals, things and people, the way in which milk nourished children, adults and calves, or the way in which clay could be gathered up to form pots to aid these transfers. Similarly the flesh of bodies reveals these flows, and the way it too moved into scavenging animals, might be cut away from the body, lowered into rivers, or burnt and sent up in smoke. Middens and mounds too might emphasise this process of flow and immersion (Fowler 2001, 156). At the same time the body could also emphasise separation. At enclosures parts of communities, whether axes or people, could be separated off and exchanged (Fowler 2003). Here and at chambered tombs they could be broken down into their constituent parts, moved or reassembled. This ontology of separation operated in parallel to the ontology of flow, and different forms of violence, different aspects of places and even the differences between materials, took their place within these perspectives. Of course the contrast between these two modes was not hard and fast as we have seen, and no doubt more detailed analysis would encounter many examples of practices that drew on elements of both, or suggest other ways in which the body could be conceived. Nonetheless, throughout this period there was a fundamental attention to parts and flows, and with this the way in which bodies could be treated differently, understood differently and presented differently.

This discussion of what the Neolithic body is, of course, also raises the important issue of what it is not. If we take the long view, we can see how the Neolithic body world was not clearly gendered across contexts, that it did not form a vehicle for expressing status and prestige in easily identifiable ways (Robb & Harris 2018). Like many other areas of Neolithic Europe it was the body's potential for difference that was emphasised, not the way in which it can also be understood as fundamentally similar across differing contexts. This fundamentally differed both from what came before, and what would come after (see Robb & Harris 2013, chapters 3 and 4). Regardless of these broader distinctions, however, what this overview shows is the need to incorporate all the different elements of Neolithic life and death into our studies of the body, and indeed the centrality of the body to everything we write about the past.

ACKNOWLEDGEMENTS

Thanks are due to Penny and Emilie for their editorial guidance and patience, and their willingness to consider this paper for their volume. I am also grateful to Rachel Crellin and Chris Fowler who kindly commented on an earlier draft. Final thanks to John Robb who gave me the opportunity more than a decade ago to think about bodies differently, and with whom the idea of a body world was first developed. Needless to say, none of the above should be held responsible for any mistakes I have made.

REFERENCES

- Ahmed, S. (2006) *Queer Phenomenology: Orientations, Objects, Others*. Durham, Duke University Press.
- Barclay, A. J. and Harris, O. J. T. (2017) Community building: Houses and people in Neolithic Britain. In P. Bickle, V. Cummings, D. Hofmann and J. Pollard (eds), *The Neolithic of Europe: Papers in Honour of Alasdair Whittle*, 222–33. Oxford, Oxbow Books.
- Barrett, J. C. (1994) *Fragments from Antiquity: An Archaeology of Social Life in Britain, 2900–1200 BC*. Oxford, Blackwell.
- Bayliss, A., Whittle, A. and Wysocki, M. (2007) Talking about my generation: The date of the West Kennet Long Barrow. *Cambridge Archaeological Journal* 17S, 85–101.
- Benson, D. and Whittle, A. (eds). (2007) *Building Memories: The Cotswold Neolithic Long Barrow at Ascott-under-Wychwood, Oxfordshire*. Oxford, Oxbow Books.
- Bloch, M. (1982) Death, women and power. In M. Bloch and J. Parry (eds.) *Death and the Regeneration of Life*, 211–30. Cambridge, Cambridge University Press.
- Borić, D. and Robb, J. E. (2008) Body theory in archaeology. In D. Borić and J. E. Robb (eds.) *Past Bodies: Body-Centred Research in Archaeology*, 1–7. Oxford, Oxbow Books.
- Bourdieu, P. (1990) *The Logic of Practice*. Stanford, Stanford University Press.
- Bradley, R. and Edmonds, M. (1993) *Interpreting the Axe Trade: Production and Exchange in Neolithic Britain*. Cambridge, Cambridge University Press.
- Brittain, M. and Harris, O.J.T. (2010) Enchaining arguments and fragmenting assumptions: reconsidering the fragmentation debate in archaeology. *World Archaeology* 42, 581–94.
- Brück, J. (2005) Experiencing the past? The development of a phenomenological archaeology in British prehistory. *Archaeological Dialogues* 12, 45–72.
- Butler, J. (1993) *Bodies That Matter: On the Discursive Limits of Sex*. London, Routledge.
- Chaffey, G. and Brook, E. (2011) Domesticity in the Neolithic: Excavations at Kingsmead Quarry, Horton, Berkshire. In H. Anderson-Whymark and J. Thomas (eds.) *Regional Perspectives on Neolithic Pit Deposition: Beyond the Mundane*, 200–15. Oxford, Oxbow Books.
- Chapman, J. and Gaydarska, B. (2007) *Parts and Wholes: Fragmentation in a Prehistoric Context*. Oxford, Oxbow Books.
- Copley, M., Berstan, R., Stott, A. and Evershed, R.P. (2008) Organic residue analysis of pottery vessels: Determination of vessel use and radiocarbon dates. In R. Mercer and F. Healy (eds.) *Hambledon Hill, Dorset, England. Excavations and Survey of a Neolithic Monument Complex and Its Surrounding Landscape*, 527–35. London, English Heritage.
- Copley, M. S., Berstan, R., Dudd, S. N., Aillaud, S., Mukerjee, A. J., Straker, V., Payne, S. and Evershed, R. P. (2005) Processing of milk products in pottery vessels through British prehistory. *Antiquity* 69, 969–80.
- Cummings, V. (2002) Between the mountains and the sea: A reconsideration of the monuments of South West Scotland. *Proceedings of the Prehistoric Society* 68, 125–46.
- Deleuze, G. and Guattari, F. (2004) *A Thousand Plateaus: Capitalism and Schizophrenia*. London, Continuum.
- Dixon, P. (1988) The Neolithic settlements on Crickley Hill. In C. Burgess, P. Topping, C. Mordant and M. Maddison (eds.) *Enclosures and Defences in the Neolithic of Western Europe*, 75–87. Oxford, British Archaeological Reports.
- Edmonds, M. (1997) Taskscape, technology and tradition. *Analecta Praehistorica Leidensia* 29, 99–110.
- Edmonds, M. (1998) Polished stone axes and associated artefacts. In F. Pryor (ed.) *Etton: Excavations at a Neolithic Causewayed Enclosure near Maxey, Cambridgeshire, 1982–7*, 260–8. London, English Heritage.
- Edmonds, M. (1999) *Ancestral Geographies of the Neolithic: Landscapes, Monuments and Memories*. London, Routledge.
- Foucault, M. (1977) *Discipline and Punish: The Birth of the Prison*. London, Allen Lane.

- Foucault, M. (1978) *A History of Sexuality, Volume 1: The Will to Knowledge*. Harmondsworth, Penguin.
- Fowler, C. (2001) Personhood and social relations in the British Neolithic with a case study from the Isle of Man. *Journal of Material Culture* 6, 137–63.
- Fowler, C. (2002) Body parts: Personhood in the Earlier Manx Neolithic. In Y. Hamilakis, M. Pluciennik and S. Tarlow (eds.) *Thinking through the Body: Archaeologies of Corporeality*, 47–69. London, Kluwer Academic/Plenum Publishers.
- Fowler, C. (2003) Rates of (ex)change: Decay and growth, memory and the transformation of the dead in Early Neolithic Southern Britain. In H. Williams (ed.) *Archaeologies of Remembrance: Death and Memory in Past Societies*, 45–63. London, Kluwer Academic/Plenum Publishers.
- Fowler, C. (2004a) *The Archaeology of Personhood: An Anthropological Approach*. London, Routledge.
- Fowler, C. (2004b) In touch with the past? Monuments, bodies and the sacred in the Manx Neolithic and beyond. In C. Fowler and V. Cummings (eds.) *The Neolithic of the Irish Sea: Materiality and Traditions of Practice*, 91–102. Oxford, Oxbow Books.
- Fowler, C. (2008) Fractal bodies in the past and present. In D. Borić and J. E. Robb (eds.) *Past Bodies: Body-Centred Research in Archaeology*, 47–57. Oxford, Oxbow Books.
- Fowler, C. (2010) Pattern and diversity in the Early Neolithic mortuary practice of Britain and Ireland: Contextualising the treatment of the dead. *Documenta Praehistorica* 37, 1–22.
- Fowler, C. (2016) Relational personhood revisited. *Cambridge Archaeological Journal* 27, 95–109.
- Fowler, C. and Cummings, V. (2003) Places of transformation: Building monuments from water and stone in the Neolithic of the Irish Sea. *Journal of the Royal Anthropological Institute* 9, 1–20.
- Fowler, C. and Harris, O. J. T. (2015) Enduring relations: Exploring a paradox of New Materialism. *Journal of Material Culture* 20, 127–48.
- Hamilakis, Y., Pluciennik, M. and Tarlow, S. (eds.) (2002) *Thinking through the Body: Archaeologies of Corporeality*. London, Kluwer Academic/Plenum Publishers.
- Harris, O. J. T. (2009) Making places matter in Early Neolithic Dorset. *Oxford Journal of Archaeology* 28, 111–23.
- Harris, O. J. T. (2010) Emotional and mnemonic geographies at Hambledon Hill: Texturing Neolithic places with bodies and bones. *Cambridge Archaeological Journal* 20, 357–71.
- Harris, O. J. T. (2011) Constituting childhood: Identity, conviviality and community at Windmill Hill. In M. Lally and A. Moore (eds.), *(Re)Thinking the Little Ancestor: New Perspectives on the Archaeology of Childhood and Infancy*, 122–32. Oxford, British Archaeological Reports.
- Harris, O. J. T. (2014a) (Re)Assembling communities. *Journal of Archaeological Method and Theory* 21, 76–97.
- Harris, O. J. T. (2014b) Revealing our vibrant past: Science, materiality and the Neolithic. In A. Whittle and P. Bickle (eds.) *Early Farmers: The View from Archaeology and Science*, 327–45. Oxford, Proceedings of the British Academy.
- Harris, O. J. T. (2016a) Becoming post-human: Identity and the ontological turn. In E. Pierce, A. Russell, A. Maldonado and L. Cambell (eds.) *Creating Material Worlds: Theorising Identity in Archaeology*, 17–37. Oxford, Oxbow Books.
- Harris, O. J. T. (2016b) Communities of anxiety: Gathering and dwelling at causewayed enclosures in the British Neolithic. In J. Fleisher and N. Norman (eds.) *The Archaeology of Anxiety: The Materiality of Anxiousness, Worry and Fear*, 121–39. New York, Springer.
- Harris O. J. T. (2017) Assemblages and scale in archaeology. *Cambridge Archaeological Journal* 27, 127–39.
- Harris, O. J. T. and Robb, J. E. (2012) Multiple ontologies and the problem of the body in history. *American Anthropologist* 114, 668–79.
- Harris, O. J. T. and Sørensen, T. F. (2010) Rethinking emotion and material culture. *Archaeological Dialogues* 17, 145–63.
- Ingold, T. (2000) *The Perception of the Environment: Essays in Livelihood, Dwelling and Skill*. London, Routledge.

- Johnson, M. (1996) *An Archaeology of Capitalism*. Oxford, Blackwell.
- Jones, A. (2005) Lives in fragments? Personhood in the European Neolithic. *Journal of Social Archaeology* 5, 193–224.
- Kinnes, I. (1992) *Non-Megalithic Long Barrows and Allied Structures in the British Neolithic*. London, British Museum.
- Lucas, G. (1996) Of death and debt: A history of the body in Neolithic and Early Bronze Age Yorkshire. *Journal of European Archaeology* 4, 99–118.
- Mauss, M. (1973) [1935] Techniques of the body. *Economy and Society* 2, 70–88.
- McFadyen, L. (2007) Making architecture. In D. Benson and A. Whittle (eds.) *Building Memories: The Neolithic Cotswold Long Barrow at Ascott-under-Wychwood, Oxfordshire*, 348–54. Oxford, Oxbow Books.
- McFadyen, L. (2008) Building and architecture as landscape practice. In B. David and J. Thomas (eds.) *Handbook of Landscape Archaeology*, 307–14. Walnut Creek, Left Coast Press.
- McKinley, J. (2008) Human remains. In R. Mercer and F. Healy (eds.) *Hambledon Hill, Dorset, England. Excavations and Survey of a Neolithic Monument Complex and Its Surrounding Landscape*, 477–535. London, English Heritage Archaeological Report.
- Meadows, J., Barclay, A. and Bayliss, A. (2007) A short passage of time: The dating of the Hazleton Long Cairn revisited. *Cambridge Archaeological Journal* 17S, 45–64.
- Mercer, R. (1999) The origins of warfare in the British Isles. In J. Carman and A. Harding (eds.) *Ancient Warfare: Archaeological Perspectives*, 143–56. Stroud, Sutton.
- Mercer, R. and Healy, F. (2008) *Hambledon Hill, Dorset, England: Excavations and Survey of a Neolithic Monument Complex and Its Surrounding Landscape*. London, English Heritage.
- Meskel, L. and Joyce, R. (2003) *Embodied Lives: Figuring Ancient Maya and Egyptian Experience*. London, Routledge.
- Neil, S., Evans, J., Montgomery, J. and Scarre, C. (2016) Isotopic evidence for residential mobility of farming communities during the transition to agriculture in Britain. *Royal Society Open Science* 3, 1–14.
- Piggott, S. (1929) Neolithic pottery and other remains from Pangbourne, Berkshire and Caversham, Oxon. *Proceedings of the Prehistoric Society of East Anglia* 6, 30–9.
- Piggott, S. (1962) *The West Kennet Long Barrow: Excavations 1955–56*. London, Her Majesty's Stationary Office.
- Pollard, J. (2006) A community of beings: Animals and people in the Neolithic of southern Britain. In D. Serjeantson and D. Field (eds.) *Animals in the Neolithic of Britain and Europe*, 135–48. Oxford, Oxbow Books.
- Price, B. (2007) Journeying into Different Realms: Travel, pilgrimage and rites of passage at Graig Lwyd. In V. Cummings and R. Johnston (eds.) *Prehistoric Journeys*, 85–101. Oxford, Oxbow Books.
- Pryor, F. (1998) *Etton: Excavations at a Neolithic Causewayed Enclosure near Maxey, Cambridgeshire 1982–7*. London, English Heritage.
- Ray, K. and Thomas, J. (2003) In the kinship of cows: The social centrality of cattle in the Earlier Neolithic of southern Britain. In M. Parker Pearson (ed.) *Food, Culture and Identity in the Neolithic and Early Bronze Age*, 37–44. Oxford, BAR.
- Riches, D. (1986) The phenomenon of violence. In D. Riches (ed.), *The Anthropology of Violence*, 1–27. Oxford, Basil Blackwell.
- Robb, J. E. and Harris, O. J. T. (2013) *The Body in History: Europe from the Palaeolithic to the Future*. Cambridge, Cambridge University Press.
- Robb, J. and Harris O. J. T. (2018) Becoming gendered in European prehistory: Was Neolithic gender fundamentally different? *American Antiquity* 83, 128–47.
- Saville, A., Hall, E. and Hoyle, J. (1990) *Hazleton North: The Excavation of a Neolithic Long Cairn of the Cotswold-Severn Group*. London, English Heritage.

- Schröder, I. W. and Schmidt, B. E. (2001) Introduction: Violent Imaginaries and Violent Practices. In B. E. Schmidt and I. W. Schröder (eds.) *Anthropology of Violence and Conflict*, 1–24. London, Routledge.
- Schulting, R. (2012) Skeletal evidence for interpersonal violence beyond mortuary monuments in southern Britain. In R. Schulting and L. Fibiger (eds.) *Sticks, Stones and Broken Bones: Neolithic Violence in a European Perspective*, 223–48. Oxford, Oxford University Press.
- Schulting, R. and Wysocki, M. (2005) “In this chambered tumulus were found cleft skulls...”: An assessment of the evidence for cranial trauma in the British Neolithic. *Proceedings of the Prehistoric Society* 71, 107–38.
- Sharples, N. M. (1991) *Maiden Castle Excavations and Field Survey 1985–6*. London, English Heritage.
- Sheets-Johnstone, M. (1999) Emotion and movement: A beginning empirical-phenomenological analysis of their relationship. *Journal of Consciousness Studies* 6, 259–77.
- Smith, I. F. (2008) Pottery and fired clay. In R. Mercer and F. Healy (eds.) *Hambledon Hill, Dorset, England. Excavations and Survey of a Neolithic Monument Complex and Its Surrounding Landscape*, 587–613. London, English Heritage.
- Smith, M. and Brickley, M. (2009) *People of the Long Barrows: Life, Death and Burial in the Earlier Neolithic*. Stroud, The History Press.
- Sofaer, J. (2006) *The Body as Material Culture: A Theoretical Osteoarchaeology*. Cambridge, Cambridge University Press.
- Strathern, M. (1988) *The Gender of the Gift: Problems with Women and Problems with Society in Melanesia*. Cambridge, Cambridge University Press.
- Thomas, J. (1993) The hermeneutics of megalithic space. In C. Tilley (ed.), *Interpretative Archaeology*, 73–97. London, Berg.
- Thomas, J. (1996) *Time, Culture and Identity: An Interpretive Archaeology*. London, Routledge.
- Thomas, J. (1999a) *Understanding the Neolithic*. London, Routledge.
- Thomas, J. (1999b) An economy of substances in Earlier Neolithic Britain. In J. E. Robb (ed.) *Material Symbols: Culture and Economy in Prehistory*, 70–89. Carbondale, Southern Illinois University.
- Thomas, J. (2000) Death, identity and the body in Neolithic Britain. *Journal of the Royal Anthropological Institute* 6, 653–68.
- Thomas, J. (2002) Archaeology’s humanism and the materiality of the body. In Y. Hamilakis, M. Pluciennik and S. Tarlow (eds.) *Thinking through the Body: Archaeologies of Corporeality*, 29–45. London: Kluwer Academic/Plenum Publishers.
- Thomas, J. (2013) *The Birth of Neolithic Britain: An Interpretive Account*. Oxford, Oxford University Press.
- Thorpe, I. J. N. (2006) Fighting and feuding in Neolithic and Bronze Age Britain and Ireland. In T. Otto, H. Thrane and H. Vandkilde (eds.) *Warfare and Society: Archaeological and Social Anthropological Perspectives*, 141–65. Aarhus, Aarhus University Press.
- Tilley, C. (1994) *A Phenomenology of Landscape: Places, Paths and Monuments*. Oxford, Berg.
- Treherne, P. (1995) The warrior’s beauty: The masculine body and self-identity in Bronze Age Europe. *Journal of European Archaeology* 3, 105–44.
- Whittle, A. (1996) *Europe in the Neolithic. The Creation of New Worlds*. Cambridge, Cambridge University Press.
- Whittle, A. (2003) *The Archaeology of People: Dimensions of Neolithic Life*. London, Routledge.
- Whittle, A. (2007) Dealing with the dead. In D. Benson and A. Whittle (eds.) *Building Memories: The Neolithic Cotswold Long Barrow at Ascott-under-Wychwood, Oxfordshire*, 356–61. Oxford, Oxbow Books.
- Whittle, A., Barclay, A., McFadyen, L., Schulting, R. and Wysocki, M. (2007a) Building for the dead: Events, processes and changing worldviews from the thirty-eighth to the thirty-fourth centuries cal BC in southern Britain. *Cambridge Archaeological Journal* 17S, 123–47.
- Whittle, A., Bayliss, A. and Wysocki, M. (2007b) Once in a lifetime: The date of the Wayland’s Smithy Long Barrow. *Cambridge Archaeological Journal* 17S, 103–21.

- Whittle, A., Healy, F. and Bayliss, A. (2011) *Gathering Time: Dating the Early Neolithic Enclosures of Southern Britain and Ireland*. Oxford, Oxbow Books.
- Whittle, A., Pollard, J. and Grigson, C. (1999) *The Harmony of Symbols: The Windmill Hill Causewayed Enclosure*. Oxford, Oxbow Books.
- Wysocki, M., Bayliss, A. and Whittle, A. (2007) Serious mortality: The date of the Fussell's Lodge Long Barrow. *Cambridge Archaeological Journal* 17S, 65–84.
- Wysocki, M. and Whittle, A. (2000) Diversity, lifestyle and rites: New biological and archaeological evidence from British Earlier Neolithic mortuary assemblages. *Antiquity* 74, 591–601.

Life on the frontier: Stress in early farming communities

Abigail Ash and Ron Pinbasi

INTRODUCTION

Every human skeleton is unique; shaped by the dynamic interaction of biology (growth and degeneration) and culture (daily activity and diet; Sofaer 2006). As such each skeleton tells the tale of a life lived, of the toil, stress and disease encountered over a lifetime. The study of skeletal remains has helped to develop insights into the symbolic mind of early humans (Garralda *et al.* 2014), provided evidence of gendered labour roles in early farming societies (Molleson 1994; Macintosh *et al.* 2014a; 2017), revealed changes in the joints most commonly affected by osteoarthritis as economic activities have diversified (Rogers & Dieppe 1994), and has the potential to identify historical figures from the scars of physical deformity or illness (Appleby *et al.* 2014).

Amongst the milieu of information that may be read from the human skeleton, signs of health and disease can be particularly useful in revealing the life histories of individuals and populations from the past. Many forms of illness may physically alter living bone, leaving a lasting marker from which the health status of an individual may be understood. However bone is limited in its ability to react to the insults of disease and generalised lesions may result from a range of maladies (Ortner 2003). In addition, not all diseases or stressors will leave their mark on bones and often individuals may succumb to the physiological trauma of infection or metabolic deficiencies before the bone is affected. Only those individuals that live with an illness for a prolonged period of time will display bony lesions (Wood *et al.* 1992). Obtaining a comprehensive view of health in historic and prehistoric populations is therefore problematic.

Certain aspects of health may be monitored through the identification of specific diseases that leave distinctive lesions, such as leprosy, tuberculosis, and syphilis, or through the recording of non-specific markers of stress. The term ‘stress’, within the context of palaeopathology, refers to disruption of normal physiological processes to the degree where growth and development of the skeletal system is affected (Temple & Goodman 2014). Markers of this disruption may be observed in the bones and teeth of individuals, but the exact cause of the stress is often unknown and difficult to determine due to the generalised nature of the bony response. Comparison of such non-specific stress between populations can, however, offer a relative measure of health and is frequently employed in the assessment of health profiles across, and after, the Neolithic transition (*e.g.* Cohen & Crane-Kramer 2007).

Over much of central Europe the *Linearbandkeramik* (LBK) culture represents the first Neolithic societies. Arising from earlier agricultural traditions in Transdanubia around 5500 cal BC, the distribution of pottery, longhouses, and burials characteristic of the LBK spread west to the Rhine over the course of two to three hundred years (Fig. 3.1; Bickle & Whittle 2013). Analysis of ancient DNA recovered from the skeletal remains of these Neolithic populations suggests that the diffusion of this culture was largely carried by the migration of individuals along the Danubian corridor, with limited introgression of native hunter-gatherer groups along the way (Gamba *et al.* 2014; Lazaridis *et al.* 2014; Haak *et al.* 2015). Large-scale homogeneity of genetic makeup and material culture has led to a generalised view of the LBK as the quintessential Neolithic farmers, following a pattern of herding and cultivation that was highly conservative across a vast geographic distribution.

Regional examination of early Neolithic sites is, however, beginning to reveal greater variation in material culture than previously recognised (Modderman 1988; Bickle & Whittle 2013). Such differences are particularly evident when comparing areas from the eastern extent of the LBK (Fig. 3.1), which has a greater time-depth of Neolithic occupation, to the early agricultural settlements of the west. These western sites show a differing trajectory of evolution in pottery style and manufacture (Bogucki & Grygiel 1993) and also occasionally produce items of pottery manufactured from local clays but lacking the eponymous linear decoration (Hauzeur 2009). Arrowheads appear more frequently within the archaeological assemblages of western sites (Gerling 2012) and wild animals constitute

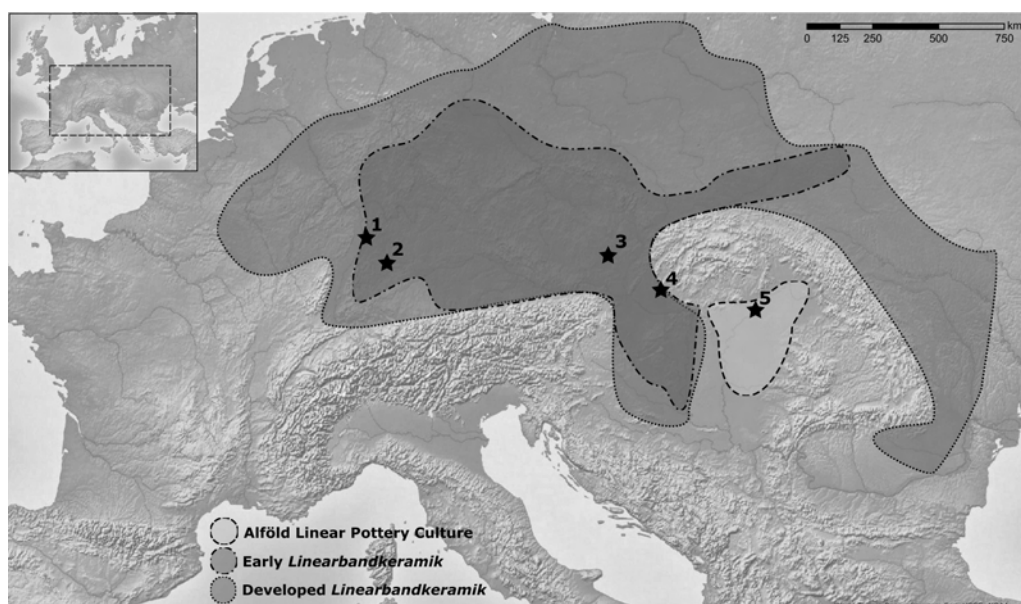


Fig. 3.1: Location map of the five Linearbandkeramik (LBK) sites mentioned in the text. The distribution of different phases of the LBK is also pictured. 1 – Schwetzingen; 2 – Stuttgart-Mühlhausen; 3 – Vedrovice; 4 – Nitra Horné Krškany; 5 – Polgár-Ferenci-bát. Drawn using the World Terrain Basemap from ArcGIS (Esri, USGS, NOAA).

a greater proportion of faunal remains than across the rest of the LBK distribution (up to 39% in the Baden-Württemberg area of southern Germany compared to 5–10% over the whole of the LBK; Döhle 1993, 108–110; Lüning 2000, 115). This could indicate a greater emphasis on hunting in this area. Utilisation of domesticate resources also differs between regions as western populations appear to have been exploiting the hardier species of pigs and einkorn wheat to a greater extent than their eastern contemporaries (Kreuz *et al.* 2005; Saqalli *et al.* 2014). Association of specific plots of land with longhouses and family lineages at Vaihingen an der Enz, in southwest Germany, could further indicate that productive land could be owned and inherited as a sign of status (Bogaard *et al.* 2011).

Increased variation in burial practices may be witnessed within some western LBK cemetery assemblages (Gerling 2012), although the conformity of such practices in other geographic areas may have been overstated (Bickle & Whittle 2013). Inclusion of individuals within LBK cemeteries with strontium isotope signatures that indicate a childhood spent outside the loess-based economy of early farmers is more frequent towards the west (Bentley *et al.* 2012; Hedges *et al.* 2013), although whether these individuals represent inter-marriage with highland hunter-gatherer groups or the utilisation of upland pastures for herding domesticates remains unclear (Bentley *et al.* 2003; 2012). Greater use of uplands within the western LBK could indicate the diversification of traditional farming techniques, while increased interaction with hunter-gatherers could also have altered economic activities as acculturation occurred. Lighter isotopes of carbon and nitrogen show subtle differences in ratios across the east–west distribution of the LBK (Hedges *et al.* 2013). Natural fluctuations in the availability of isotopes over the landscape of central Europe may account for some of the variation in isotopic ratios from human bones but it is also possible that the diets of LBK populations differed slightly.

An argument may therefore be made, based on archaeological and isotopic evidence, that settlements towards the western limits of the LBK encountered difficulties in maintaining an agricultural lifestyle like that seen in the east (Ash *et al.* 2016). Exploitation of hardier domesticate species and a greater reliance on wild fauna may suggest that the wetter climate of western-central Europe resulted in a lower agricultural productivity (Bogaard 2004, 148; Bentley *et al.* 2013) and the need for populations to adapt their economic behaviour to better suit local conditions. Prior to the arrival of the LBK, the landscape of central Europe had not been under sustained cultivation and although settlements tended to be located on familiar loess sediments (Marciniak 2005, 12), the establishment of new agricultural plots is unlikely to have been without risk.

The movement of European pioneers to the American frontier in the seventeenth century AD had devastating consequences not only for indigenous populations but also for the settlers. Historical records and osteological analysis of colonial-age cemeteries suggest that life on the frontier was hard, with heavy manual labour, a large disease load, and high mortality (Larsen *et al.* 1995; King 1996; King and Ubelaker 1996; Wood 1996). Though a direct comparison cannot be drawn between the American frontier and the initial arrival of agricultural populations in central Europe due to the different time periods, environments and cultures involved, such an analogy does serve to highlight the potential hardships involved in transplanting subsistence economies into untried lands. Heavy reliance on the cultivation of crops and rearing of livestock may have made LBK populations particularly susceptible to changes in local environmental and geological conditions and any reduction in

agricultural productivity is likely to have had an effect on the health of pioneer populations that may have continued to be felt generations later (Gowland 2015). Unfortunately, little palaeopathological analysis of human skeletal remains from LBK populations has been conducted, so at present the nature of this impact is unclear.

To investigate aspects of health in the Neolithic and to test whether any evidence of a frontier effect could be seen in populations from the western LBK, this study measured the prevalence of five non-specific indicators of stress – porotic hyperostosis, *cribra orbitalia*, non-specific insult, joint degeneration, and linear enamel hypoplasia – within two cemetery collections from southern Germany: Schwetzingen and Stuttgart-Mühlhausen (Fig. 3.1). Age at onset of hypoplastic enamel formation was also calculated and estimates of average age at death taken. Due to the rapid migration of populations across Europe during the Early Neolithic, any LBK cemetery could contain individuals who had lived in pioneer settlements. To control for this, three skeletal collections from more easterly sites were also examined. The Carpathian Basin has a deeper history of occupation by agricultural communities than the rest of central Europe and settlements from this area were therefore expected to show lower levels of stress having had longer to adapt to local conditions. The time averaging effect of two to three hundred years of cemetery use in each location, assuming constant conditions, might therefore act to dilute the frequency of stress indicators within eastern LBK populations but increase the visibility of stress in western populations as generations adapt and begin to live long enough for skeletal markers of non-specific stress to develop.

MATERIALS AND METHODS

Five skeletal assemblages from the LBK were included in this study. The location of each site within central Europe is shown in Figure 3.1.

Schwetzingen. Located on the eastern bank of the Rhine in Baden-Württemberg, Germany, and excavated in 1989, Schwetzingen is one of the largest LBK cemeteries recovered to date (Gerling 2012). From a total of 203 burials, 194 were inhumations and 100 of these were sampled for the present study. The preservation of remains within this cemetery was highly variable due to a history of heavy land use. The site began to be used as a cemetery from 5170 (± 90) cal BC and activity continued over a period of up to 160 years before the site fell out of use around 5090 (± 80) cal BC (Bentley *et al.* 2013). Burials were predominantly placed on their left side in a contracted position along a north–east/south–west axis, although many other positions and orientations were also observed (Gerling 2012), and only 50% of graves contained artefacts (Gerling & Francken 2007). Analysis of dietary isotopes at this site indicated that individuals were consuming a mixed terrestrial diet, although the proportion of animal protein consumed may have been low compared to other LBK sites and both upland and lowland sources of food may have been utilised by different groups within the cemetery (Bentley *et al.* 2013). Strontium isotopes suggest relatively high levels of mobility within the population, principally movement away from highlands onto the lowland loess soils and particularly amongst females (Price *et al.* 2001; Bentley 2013).

Stuttgart-Mühlhausen. Located above the floodplain of the Neckar River approximately 80km south-east of Schwetzingen, this multi-period cemetery was in use between 5200

and 4900 cal BC (Stäuble 2005). Analysis of pottery within burials suggests 177 graves may date to the Early Neolithic at a time contemporaneous with Schwetzingen. Two sub-sites are recognised: the southern site was excavated from 1977–1982 and contained 84 graves, while the northern site was investigated later in 1991–1993 and contained 93 burials (Price *et al.* 2004). A total of 116 individuals were sampled from this population. Individuals were typically buried on their left side in a contracted position and along a west–east axis. Grave goods were particularly numerous although a detailed catalogue has yet to be published (Price *et al.* 2004). Examination of strontium isotopes from consecutive molar teeth indicated that males at this site may have undergone a period of seasonal or temporary mobility away from loess areas during childhood (Knipper 2009; Knipper & Price 2010).

Vedrovice. Located in the south-east Czech Republic, this site consists of three contemporaneous localities containing a total of 113 inhumation burials (Lukes *et al.* 2008), all of which were included in the present study. Burials were predominantly orientated west–east and skeletal remains lay on their left side in a contracted position (Whittle *et al.* 2013a). Direct radiocarbon dating of remains suggested the site was in use between 5300–5100 cal BC and preservation was generally good (Pettitt & Hedges 2008). Generous spacing between graves suggests that markers may have been used and burial placings remembered for multiple generations (Bradley 2001). Grave goods were present in 76% of burials, with polished stone artefacts more common in the burials of males while grindstones and polishing stones were more frequently associated with females (Zvelebil & Pettitt 2008). Dietary isotopes indicated the consumption of a mixed terrestrial diet (Zvelebil & Pettitt 2008) and low nitrogen values for both humans and fauna at this site appear to suggest either that crops grown near this settlement were not fertilised with manure or that domestic animals were not grazed upon the stalks of cultivated crops (Bogaard *et al.* 2007).

Nitra Horné Krškany. Rescue excavations in 1964/65 in western Slovakia recovered 78 inhumation burials and eight groups of cremated human remains after construction of a motorway revealed a Neolithic cemetery (Pavúk 1972). 81 individuals were sufficiently preserved for analysis. Radiocarbon dates obtained from 12 graves indicated that the site had been in use between 5375–4980 cal BC (Whittle *et al.* 2013a). Inhumations were orientated along a predominantly north–west to south–east axis, were laid on their left side with lower limbs flexed and were associated with goods in 62% of burials (Pavúk 1972; Whittle *et al.* 2013a). No association between grave goods and the age or sex of individuals was apparent. Dietary isotopes further suggested that diet had not varied between males and females, all having consumed a mixed terrestrial diet, however strontium isotopic ratios indicated that a greater proportion of females than males had spent their childhood outside of the loess belt (Whittle *et al.* 2013a).

Polgár-Ferenci-hát. Located near the village of Polgár in eastern Hungary, the land around this site would have formed an alluvial island in the Tisza floodplain that appears to have been a focus for prehistoric activity. Excavations in 2001/02 revealed 3.6 hectares of a Neolithic settlement enclosed by an elongated oval double ditch system and 116 burials within pits dispersed throughout the settlement (Raczky and Anders 2009), although only 106 could be located for analysis. Direct dating of bones and typological analysis of pottery from graves suggests burials were from the Alföld Linear Pottery phase of site occupation (5300–5070 cal BC; Raczky & Anders 2012; Gamba *et al.* 2014). All but three of the burials

were laid on their left side in a contracted position with a southeast–northwest orientation and only 28% contained grave goods (Raczky & Anders 2012). Analysis of stable isotopes revealed that individuals had consumed a mixed terrestrial diet and predominantly lived their whole lives on the local loess soils (Whittle *et al.* 2013b).

A total of 511 skeletons were examined. The age and sex of each specimen was assessed using standard osteological methods from observation of both the crania and *ossa coxae*, where possible (Phenice 1969; Ferembach *et al.* 1980; Brooks & Suchey 1990; Buikstra & Ubelaker 1994; Buckberry & Chamberlain 2002). Bones were then examined macroscopically for the presence of five non-specific indicators of stress (Fig. 3.2).

Porotic hyperostosis and *cribra orbitalia* were identified through the observation of scattered pores on the bones of the neurocranium and upper orbit, respectively. Pores appear on the bone surface as the cranial diploe expands to accommodate an increased volume of marrow and the concomitant reduction in cortical bone thickness exposes the underlying structure (Roberts & Manchester 2005, 229). Both conditions may be indicative of a deficiency in iron and/or vitamin B12 as a result of dietary inadequacy or accelerated bodily loss due to parasitic infection (Stuart-Macadam 1987; Walker *et al.* 2009). Non-specific insult, or periosteal new bone, presents as new bone formation on the periosteal surface as a response either to damage of the overlying soft tissues or the haematogenous spread of an infectious agent (Ortner 2003). As the second most common location of new bone formation, after the endocranial surface (Eisenberg 1991), this study focused on the expression of non-specific insult on the tibiae. Articular surfaces of long bones from five major joints in the human body – the wrist, elbow, shoulder, hip, and knee – were examined for degenerative characteristics. Where surface polishing (eburnation), osteophytic development, surface porosity, or alterations in the contours of articular surfaces were observed in any element, joint degeneration was deemed to be present for that joint (Waldron & Rogers 1991). Within the anterior teeth (incisors and canines) bands of decreased enamel thickness identifiable by eye were recorded as linear enamel hypoplastic defects. These defects form when the process of enamel production is disrupted due to a decreased availability of calcium or the disorientation, degeneration or atrophy of ameloblasts, the enamel forming cells (Hillson & Bond 1997), and signal chronic systemic physiological stress encountered during childhood (Goodman & Rose 1991).

The prevalence of each of the five non-specific indicators of stress was calculated for all five populations. This was measured as the proportion of individuals displaying each of the indicators out of the total number for which the relevant skeletal elements were available for observation. In addition to prevalence data, the distance of each hypoplastic defect from the cemento-enamel junction (CEJ) to the border of the defect closest to the tooth cusp was measured. Digital sliding calipers with an accuracy of 0.01mm were used and the location of each defect was measured three times to provide an average. CEJ to defect distances were then used to calculate an age at onset of hypoplasia formation using the Goodman and Rose (1991) equation and tooth crown growth standards from Smith (1991). Age-at-death of each individual was taken as the mid-point of the age estimation bracket and used in the calculation of an average age-at-death for adults (aged 18+) and juveniles (birth to 17 years) in all populations.

Statistical analysis of results was conducted using R software (R Core Team 2014). Prevalence of indicators was compared between populations and also between males and females, and adults and juveniles, within populations using the Chi-square test for

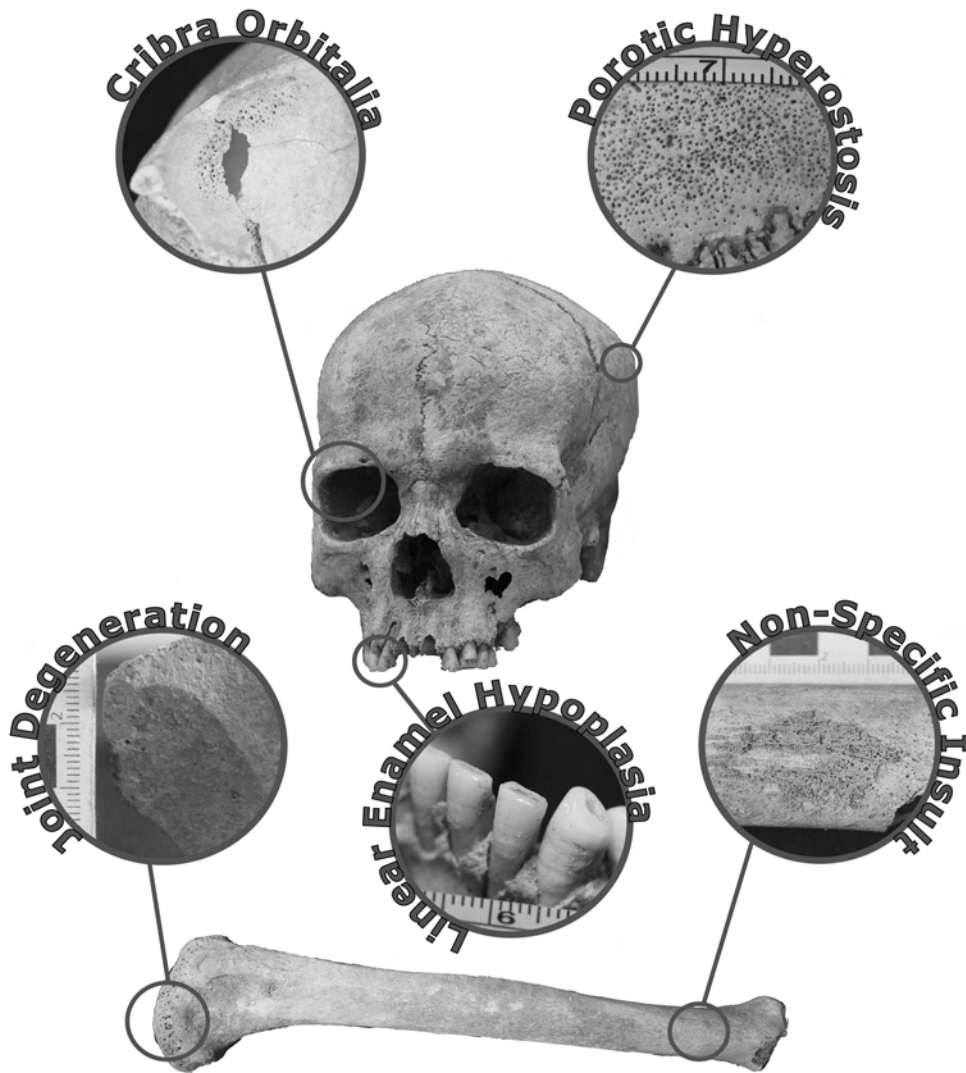


Fig. 3.2: Appearance of the five non-specific indicators of stress assessed in each population. Porotic hyperostosis was observed upon the bones of the cranial vault, cribra orbitalia within the bone of the upper orbits, non-specific insult on the tibia, joint degeneration on the articular surfaces of five major appendicular joints, and linear enamel hypoplasia within the incisors and canines of the maxilla and mandible. Only skeletons with the appropriate element preserved were included in the calculation of prevalence for each indicator.

independence. Application of the Kruskal-Wallis analysis of variance tested for variation in the average age at onset of hypoplasia formation between populations, while unpaired Wilcoxon rank sum tests further revealed any differences in onset between the sexes and also between adults and juveniles within populations. Finally a further Kruskal-Wallis test was conducted to assess any difference in age-at-death.

RESULTS

The prevalence of non-specific stress within populations is presented in Figure 3.3 and Table 3.1. Indicators of stress were present in all subgroupings of populations. No enamel defects were recorded in the deciduous dentition so all numbers presented are for the permanent teeth only.

Porotic hyperostosis was particularly prevalent at Stuttgart-Mühlhausen, being observed in 80.23% of crania, but was also high at Schwetzingen (48.75%), Nitra Horné Krškany (58.57%) and Polgár-Ferenci-hát (47.30%). Prevalence was consistently high amongst adults but significantly lower within the juvenile subset of populations and males showed a higher prevalence than females in all populations, though this difference was not significant at Vedrovice and Nitra Horné Krškany (Table 3.1). *Cribra orbitalia* was also observed at high prevalence within both western LBK populations but at more moderate levels in skeletal material from sites further east. Converse to the pattern seen with porotic hyperostosis, the juvenile subset of all populations showed a higher prevalence of *cribra orbitalia*, with differences being statistically significant at all sites except Vedrovice. Differences

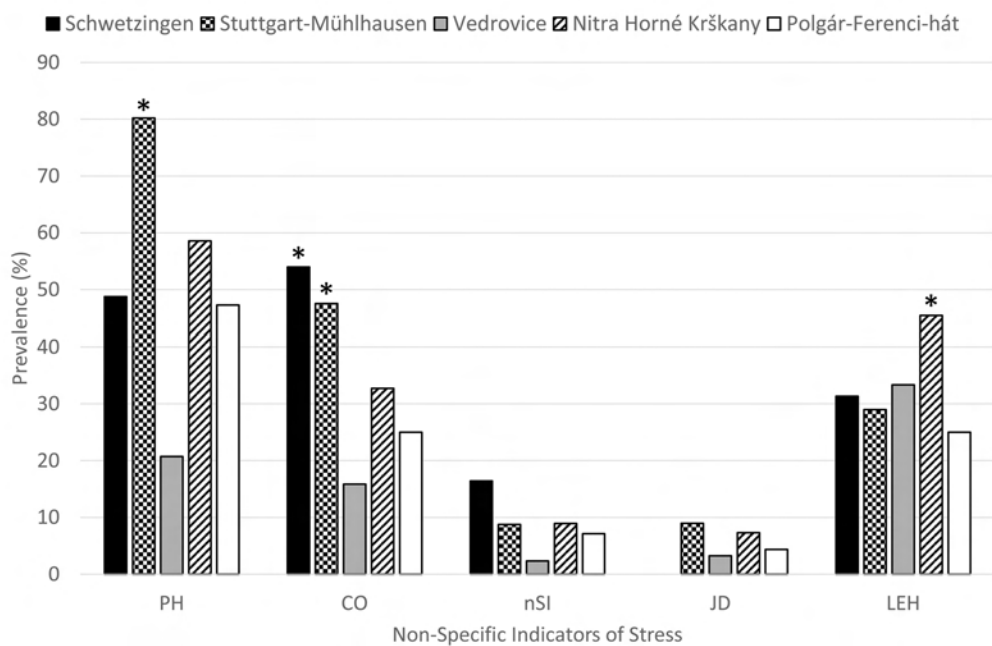


Fig. 3.3: Bar chart showing the prevalence of each non-specific indicator of stress within the five LBK populations. An asterisk indicates populations with significantly higher prevalence according to the results of multiple Chi-square tests for independence. Porotic hyperostosis was particularly prevalent at Stuttgart-Mühlhausen, while both populations from the western LBK had higher prevalence of *cribra orbitalia* than populations from the east. Only linear enamel hypoplastic defects were found at higher prevalence in an eastern population. Populations are arranged in geographical order from west to east. PH – porotic hyperostosis; CO – *cribra orbitalia*; nSI – non-specific insult; JD – joint degeneration; LEH – linear enamel hypoplasia.

Table 3.1: Prevalence of non-specific stress in LBK populations.

Indicator	Site	Prevalence							
		Male		Female		Adult		Juvenile	
		n_a	%	n_a	%	n_a	%	n_a	%
<i>Porotic hyperostosis</i>	SW	21	65.63	11	55.00	32	60.38*	7	25.93*
	SM	35	87.50	14	87.50	55	88.71*	14	58.33*
	V	7	26.92*	4	13.79*	13	21.67	4	18.18
	HK	17	73.91	11	64.71	32	71.11*	9	36.00*
	PF	19	73.08*	8	44.44*	29	61.70*	6	22.22*
<i>Cribra orbitalia</i>	SW	16	53.33*	7	35.00*	23	46.00*	11	84.62*
	SM	15	50.00*	3	23.08*	19	41.30*	10	66.67*
	V	4	17.39	2	8.00	6	12.24*	4	28.57*
	HK	4	18.18*	6	46.15*	11	30.56	7	36.84
	PF	1	5.56*	6	35.29*	7	20.00*	6	35.29*
<i>Non-specific insult</i>	SW	8	27.59*	2	9.52*	10	20.00*	1	5.88*
	SM	2	5.26	1	4.76	4	6.45*	3	16.67*
	V	2	6.67*	0	0.00*	2	3.13	0	0.00
	HK	2	9.09	2	13.33	4	10.53	1	5.56
	PF	2	8.00	2	16.67	4	10.81*	0	0.00*
<i>Joint degeneration</i>	SW	0	0.00	0	0.00	0	0.00	—	—
	SM	6	12.50*	0	0.00*	7	8.97	—	—
	V	0	0.00*	2	6.90*	2	3.23	—	—
	HK	2	9.09	1	5.88	3	7.32	—	—
	PF	2	6.45	0	0.00	2	4.35	—	—
<i>Linear enamel hypoplasia</i>	SW	9	29.03	7	36.84	16	32.00	5	29.41
	SM	10	27.78	3	21.43	15	27.78	5	33.33
	V	9	36.00	9	34.62	19	34.55	2	25.00
	HK	4	33.33	3	42.86	7	36.84*	3	100.00*
	PF	3	12.50*	5	27.78*	8	18.60*	5	55.56*

An asterisk denotes a statistically significant difference ($P < 0.05$) in the prevalence of stress between either males and females or adults and juveniles within each population (Chi-square test for independence). n_a – number of affected individuals; % – prevalence. SW – Schwetzingen; SM – Stuttgart-Mühlhausen; V – Vedrovice; HK – Nitra Horné Krškany; PF – Polgár-Ferenci-hát.

between the sexes were also evident as western LBK males displayed a significantly higher prevalence of *cribra orbitalia* than females, while female prevalence was higher in the two most easterly populations of Nitra Horné Krškany and Polgár-Ferenci-hát.

Non-specific insult and joint degeneration were most prevalent at Schwetzingen (16.42%) and Stuttgart-Mühlhausen (8.97%) respectively, particularly amongst adult males, but the number of individuals affected was low overall. In fact, no characteristics of joint degeneration could be identified in the major appendicular joints of individuals from Schwetzingen. Distribution of non-specific insult within populations was highly variable, showing no overall trends.

Of the five indicators of non-specific stress included in this study, only linear enamel hypoplasia were found at higher frequency in an eastern population (Nitra Horné Krškany: 45.45%). Small sample size (n=3) may mean that the exceptionally high prevalence of juveniles with hypoplastic defects in this population is an over-representation, however even discounting this result adult prevalence was higher at Nitra Horné Krškany than at any other LBK population. Significant differences in the proportion of males and females with hypoplastic defects were observed only at Polgár-Ferenci-hát, where the prevalence amongst females was highest (27.78% versus 12.50%, $p=0.012$). Greater juvenile than adult prevalence of defects was also found within the skeletal collection from Polgár-Ferenci-hát (55.56% versus 18.60%, $p<0.001$) but at no other site if the sample bias from Nitra Horné Krškany is removed.

Age at onset of linear enamel hypoplasia formation varied significantly between LBK populations ($H=31.90$, $df=4$, $p<0.001$, Table 3.2). Onset was earliest, on average, at Nitra Horné Krškany (mean of 2.94 years) but relatively delayed within the western populations, at an average age of 3.89 years at Schwetzingen and 3.87 years at Stuttgart-Mühlhausen. A similar average age at onset was seen at Vedrovice (3.69 years) with the average age from Polgár-Ferenci-hát falling a little earlier (3.23 years). Onset of hypoplastic enamel formation was significantly earlier in individuals who had died during childhood compared to those who survived to become adults at Vedrovice, Nitra Horné Krškany and Polgár-Ferenci-hát (Table 3.2). Such differences between adult and juvenile onset did not exist in populations from Schwetzingen and Stuttgart-Mühlhausen, but Schwetzingen was the only population to evidence a significant difference between the sexes. Onset amongst females was later by an average of almost one year than amongst males ($W=340$, $p=0.006$).

Average age-at-death of adult and juvenile subsets for each population are presented in Table 3.3. Adult age-at-death did not vary considerably across the geographic distribution of the LBK ($H=3.83$, $df=4$, $p=0.430$) but significant differences were observed in the

Table 3.2: Average age at onset of hypoplastic enamel formation in LBK populations.

Population	Total pop ^a	Average age at onset (years)			
		Male	Female	Adult	Juvenile
Schwetzingen	3.89	3.65*	4.40*	3.96	3.75
Stuttgart-Mühlhausen	3.87	3.89	3.70	3.80	4.23
Vedrovice	3.69	3.81	3.62	3.73*	2.77*
Nitra Horné Krškany	2.94	3.72	3.24	3.58*	1.89*
Polgár-Ferenci-hát	3.23	4.36	4.02	4.16*	2.68*

An asterisk denotes a statistically significant difference ($P<0.05$) in age between either males and females or adults and juveniles within each population (unpaired Wilcoxon rank sum test).

Table 3.3: Average age-at-death for adult and juvenile subsets of each population, displayed as the mean and modal values for comparison.

Population	n	Average age-at-death (years)				
		Adult		Juvenile		
		Mean	Mode	n	Mean	Mode
Schwetzingen	54	36.4	32.5	33	8.0	6.5
Stuttgart-Mühlhausen	70	34.7	32.5, 37.5	27	8.8	13.0
Vedrovice	62	33.6	32.5	27	5.9	2.5
Nitra Horné Krškany	35	35.9	32.5, 52.5	20	8.4	10.0
Polgár-Ferenci-hát	59	34.1	32.5	26	6.3	2.5

age-at-death of juveniles ($H=14.01$, $df=4$, $p=0.007$). Both mean and modal averages indicate that juveniles from Vedrovice and Polgár-Ferenci-hát were more likely to die at a much younger age than cohorts in the other LBK populations.

DISCUSSION

Growing evidence from archaeological and isotopic studies indicates that variation in material culture and subsistence practices across the geographic distribution of the LBK may have been greater than previously believed. High frequency of arrowheads and the remains of wild fauna, especially pig, within archaeological assemblages from LBK sites towards the west of central Europe (Döhle 1993, 108–110; Lüning 2000, 115; Gerling 2012) perhaps indicate a greater reliance on hunting than in eastern areas. This change in behaviour may represent a greater economic need for hunted meat as archaeobotanical studies suggest agricultural productivity may have been low within the western LBK (Bogaard 2004, 148; Bentley *et al.* 2013). Diversification of subsistence strategies (Bentley *et al.* 2012) and retention of productive land within family lineages (Bogaard *et al.* 2011) in this area may also represent responses to lower agricultural productivity.

Sub-optimal growing conditions for Neolithic domesticates in the western LBK would have increased the risk of crop failure and food deficit. Adaptation to these conditions would have had a far-reaching impact on the lives of Early Neolithic farmers. High rates of nutritional stress and disease are associated with periods of food scarcity in modern populations from low-income countries (Goodman *et al.* 1991; de Benoist *et al.* 2008; Moschovis *et al.* 2013), may be witnessed in the skeletons of historic famine victims (Razzaque *et al.* 1990; Geber 2014) and are also evident in the skeletal remains of pioneers from the seventeenth century American frontier (Larsen *et al.* 1995; King 1996; King and Ubelaker 1996; Wood 1996). Higher prevalence of porotic hyperostosis and *cribra orbitalia* within the western LBK is therefore consistent with increased nutritional stress compared to populations located further east in central Europe. Slightly higher levels of non-specific insult and joint degeneration were also observed in one or both of the western populations. This result may further be suggestive of a more physiologically demanding lifestyle at the

western limits of this archaeological culture, echoing findings from the biomechanical assessment of Neolithic tibiae (Macintosh *et al.* 2014b).

Changing behaviours may not have affected all components of the population equally: association of access to more fertile land with longhouses producing ceramics stylistically closer to Transdanubian traditions (Bogaard *et al.* 2011) and the burial of stone adzes predominantly with males who had a strontium isotopic signature from local loess soils (Bentley *et al.* 2012), seems to suggest that some form of social stratification may have operated in the western LBK. Social differences in the roles of males and females within western societies may also have existed, contributing to variation between the sexes in the expression of non-specific stress. Greater prevalence of porotic hyperostosis in males than females across the LBK may result from a greater biological propensity in males to develop bone porosity (Ortner 1998), but the reversal of the sex with the greatest prevalence of *cribra orbitalia* in eastern compared to western populations cannot be explained in these biological terms. Schwetzingen, in the west of the LBK distribution, was also the only population in which the age at onset of linear enamel hypoplasia formation differed between males and females. Previous studies have indicated general overlap in the carbon and nitrogen isotopic ratios of both sexes, suggesting there was little variation in the diet consumed by males and females (Bentley *et al.* 2013; Whittle *et al.* 2013b). Differences in the experience and expression of non-specific stress were therefore probably social in origin.

Higher prevalence of enamel hypoplastic defects in eastern populations may also have a social influence, although potential differences in the physiological pathways that lead to skeletal and dental indicators of stress cannot be ruled out. Similarities in the age at onset of hypoplasia formation in the dentition of adults and juveniles from both western LBK populations may indicate a late onset of stress that disrupted enamel formation but did not directly impact mortality rates. High early childhood mortality in western populations could also give the appearance of late onset: early stress experienced by individuals who died prior to the age of dental eruption could not be included in analysis as the permanent teeth remained hidden in the alveolar bone. If stress experienced early in life affected the ability of an individual to withstand later stress (Armelagos *et al.* 2009), much of the dental evidence for early stress onset would be lost under conditions of high early childhood mortality.

Rates of childhood mortality appear to have been greater in eastern populations however, as mean age-at-death was significantly lower at Vedrovice and Polgár-Ferenci-hát (Table 3.3). The most frequent age at which juveniles died within these two populations was 2.5 years; an average of four years younger than juveniles at Schwetzingen and 10.5 years younger than those at Stuttgart-Mühlhausen. While this result is striking, the inclusion of settlement burials within the Vedrovice and Polgár-Ferenci-hát skeletal collections may account for some of this reduced age as younger children were more likely to have been buried within settlements than within dispersed cemeteries, like Schwetzingen and Stuttgart-Mühlhausen, during the Neolithic (Bickle & Fibiger 2014). Without being able to account for some selection in the burial location of juveniles, both mean and modal measures of average age-at-death suggest that childhood mortality was moderately low in the western LBK and therefore that the later onset of hypoplasia formation reflects a genuine pattern of later onset of stress. In contrast, earlier onset of hypoplasia formation combined with younger average juvenile age-at-death at Vedrovice and Polgár-Ferenci-hát seem to signal greater early childhood morbidity and mortality relative to populations further west. The population from Nitra Horné Krškany exhibited the earliest average age at onset of

hypoplasia formation but had a high mean and modal juvenile age-at-death, suggesting low early childhood mortality but high morbidity.

Formation of linear enamel hypoplastic defects is often associated with the stresses of weaning due to the high frequency of defects that form at around two to four years of age within most populations (Dobney & Goodman 1991; Pechenkina *et al.* 2007; Miszkiewicz 2015). This age coincides with ethnographic and historical accounts of full weaning from mother's milk (Fouts *et al.* 2005; Kennedy 2005) and also isotopic evidence of weaning within the LBK at around three years (Oelze *et al.* 2011). Other stresses may disrupt enamel formation and there is some evidence that enamel may be more susceptible to disruption between two to four years of age (Suckling & Thurley 1984), but the association with weaning remains strong. Delay in the occurrence of full weaning within western LBK populations may therefore provide an explanation for the later onset of hypoplasia formation at Schwetzingen and Stuttgart-Mühlhausen.

Ethnographic accounts suggest that weaning may be delayed in times of food shortage (Lindstrom & Berhanu 2000). This provides some protection against starvation for both adults and infants. However, after six months a diet entirely dependent on breastmilk is not nutritionally sufficient for a growing human infant (Weiss *et al.* 2004). Key nutrients, such as iron and vitamin B12, must be obtained from other food sources otherwise infants may become anaemic (Hoshower 1994). Approximately 50–75% of clinical patients presenting with chronic iron-deficiency anemia show some porous modification of cranial bones on radiographs (Stuart-Macadam 1991). High prevalence of porotic hyperostosis at Stuttgart-Mühlhausen and of *cribra orbitalia* at both western LBK sites may therefore reflect a high incidence of nutritional deficiencies due to delayed weaning, which itself may have been a consequence of food shortages due to low agricultural productivity at the western limits of the LBK.

The stresses leading to conditions of cranial porosity and enamel hypotrophy in Early Neolithic populations therefore appear to have been part of a similar social process but with differing biological consequences. Higher adult than juvenile prevalence of porotic hyperostosis suggests this condition did not directly impact the longevity of individuals but the high prevalence of *cribra orbitalia* amongst juveniles in all LBK populations may indicate a higher mortality rate of individuals developing this condition. Orbital porosity may develop first resulting either in death or later progression to cranial involvement with prolonged stress (Stuart-Macadam 1998; Facchini *et al.* 2004), however the area of the cranium affected may also reflect the age at which an individual was when the stress was experienced (Walker *et al.* 2009). Early experience of stress leading to the disruption of enamel formation seems more closely linked with a decrease in life expectancy (Armélagos *et al.* 2009). The experience of stress and how it is recorded within the human skeletal system is therefore complex and requires caution in its interpretation.

CONCLUSIONS

Examination of five indicators of non-specific stress within skeletal collections from five LBK sites in central Europe revealed higher levels of stress towards the western limits of this archaeological culture. Expression of stress was high in the two populations from the western LBK corresponding with archaeological and isotopic evidence of low agricultural

productivity and an increased emphasis on hunting, but mortality amongst juveniles was relatively low compared to contemporary populations from further east. Onset of stress appeared later in western populations, perhaps reflecting delay in the weaning process as an adaptation to reduced food availability. Although direct comparison with the American frontier cannot be made, a frontier effect resulting from the transplantation of pre-existing agricultural subsistence practices into areas of novel environmental conditions may be witnessed within the western distribution of the LBK. Adaptation to these new conditions resulted in increased variation in economic practices, material culture, and health.

ACKNOWLEDGEMENTS

This research was supported by Ron Pinhasi's European Research Council Starting Grant (ERC-2010-StG 263441), hosted by University College Dublin (2011–2015). The authors further wish to thank Joachim Wahl (State Office for Cultural Heritage Management Baden-Württemberg), Michael Francken (University of Tübingen), Zdeněk Tvrdý (Moravian Museum), and Ildikó Pap (Budapest National Museum of Natural History) for their assistance and access to collections.

REFERENCES

- Appleby, J., Mitchell, P. D., Robinson, C., Brough, A., Rutt, G., Harris, R. A., Thompson, D. and Morgan, B. (2014) The scoliosis of Richard III, last Plantagenet King of England: Diagnosis and clinical significance. *The Lancet* 383, 1944.
- Armstrong, G. J., Goodman, A. H., Harper, K. N. and Blakey, M. L. (2009) Enamel hypoplasia and early mortality: Bioarchaeological support for the Barker Hypothesis. *Evolutionary Anthropology* 18, 261–71.
- Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J. and Pinhasi, R. (2016) Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. *Scientific Reports* 6. DOI: 10.1038/srep29458 (accessed on 10th December 2017).
- Bentley, R. A. (2013) Mobility and the diversity of Early Neolithic lives: Isotopic evidence from skeletons. *Journal of Anthropological Archaeology* 32, 303–312.
- Bentley, R. A., Krause, R., Price, T. D. and Kaufmann, B. (2003) Human mobility at the Early Neolithic settlement of Vaihingen, Germany: Evidence from strontium isotope analysis. *Archaeometry* 45, 471–86.
- Bentley, R. A., Bickle, P., Fibiger, L., Nowell, G. M., Dale, C. W., Hedges, R. E. M., Hamilton, J., Wahl, J., Francken, M., Grupe, G., Lenneis, E., Teschler-Nicola, M., Arbogast, R. M., Hofmann, D. and Whittle, A. (2012) Community differentiation and kinship among Europe's first farmers. *Proceedings of the National Academy of Sciences* 109, 9326–30.
- Bentley, R. A., Bickle, P., Francken, M., Gerling, C., Hamilton, J., Hedges, R., Stephan, E., Wahl, J. and Whittle, A. (2013) Baden-Württemberg. In P. Bickle and A. Whittle (eds.) *The First Farmers of Central Europe: Diversity in LBK lifeways*, 251–90. Oxford, Oxbow Books.
- Bickle, P. and Whittle, A. (2013) LBK Lifeways: A search for difference. In P. Bickle and A. Whittle (eds.), *The First Farmers of Central Europe: Diversity in LBK lifeways*, 1–27. Oxford, Oxbow Books.
- Bickle, P. and Fibiger, L. (2014) Ageing, childhood and social identity in the early Neolithic of Central Europe. *European Journal of Archaeology* 17, 208–228.

- Bogaard, A. (2004) *Neolithic Farming in Central Europe: An Archaeobotanical Study of Crop husbandry practices*. Routledge, London.
- Bogaard, A., Heaton, T. H. E., Poulton, P. and Merbach, I. (2007) The impact of manuring on nitrogen isotope ratios in cereals: Archaeological implications for reconstruction of diet and crop management practices. *Journal of Archaeological Science* 34, 335–43.
- Bogaard, A., Krause, R. A. and Strien, H. C. (2011) Towards a social geography of cultivation and plant use in an early farming community: Vaihingen an der Enz, south-west Germany. *Antiquity* 85, 395–416.
- Bogucki, P. and Grygiel, R. (1993) The first farmers of central Europe: A survey article. *Journal of Field Archaeology* 20, 399–426.
- Bradley, R. (2001) Orientations and origins: A symbolic dimension to the longhouse in Neolithic Europe. *Antiquity* 75, 50–8.
- Brooks, S. and Suchey, J. M. (1990) Skeletal age determination based on the os pubis: A comparison of the Ascádi-Nemeskéri and Suchey-Brooks methods. *Human Evolution* 5, 227–38.
- Buckberry, J. and Chamberlain, A. T. (2002) Age estimation from the auricular surface of the ilium: a revised method. *American Journal of Physical Anthropology* 119, 231–39.
- Buikstra, J. E. and Ubelaker, D. H. (1994) *Standards for Data Collection from Human Skeletal Remains*. Fayetteville, Arkansas Archaeological Survey Research Series 44.
- de Benoist, B., McLean, E., Egli, I. and Cogswell, M. (eds.) (2008) *Worldwide Prevalence of Anemia 1993–2005*. Geneva, Switzerland, WHO Press. Available at: http://asset.atlasproject.eu/who/t_file/16e8202d-a355-4fc6-9aa0-b182ca7b1ac1/9af80260-bf71-11e1-afa7-0800200c9a66/9789241596657_eng.pdf (accessed on 24th May 2014).
- Cohen, M. N. and Crane-Kramer, G. M. M. (eds.) (2007) *Ancient Health: Skeletal Indicators of Agricultural and Economic Intensification*. Tallahassee, University Press of Florida.
- Dobney, K. and Goodman, A. H. (1991) Epidemiological studies of dental enamel hypoplasias in Mexico and Bradford: Their relevance to archaeological skeletal studies. In H. Bush and M. Zvelebil (eds.), *Health in Past Societies: Biocultural Interpretations of Human Skeletal Remains in Archaeological Contexts*, 81–100. British Archaeological Reports International Series 567. Oxford, Tempus Reparatum.
- Döhle, H.-J. (1993) Haustierhaltung und Jagd in der Linienbandkeramikein Überblick. *Zeitschrift für Archäologie* 27, 105–24.
- Eisenberg, L. E. (1991) Interpreting measures of community health during the late prehistoric period in middle Tennessee: A biocultural approach. In H. Bush and M. Zvelebil (eds.) *Health in Past Societies: Biocultural Interpretations of Human Skeletal Remains in Archaeological Contexts*, 115–27. British Archaeological Reports, International Series 567. Oxford, Archaeopress.
- Facchini, F., Rastelli, E. and Brasili, P. (2004) *Cribra orbitalia* and *cribra cranii* in Roman skeletal remains from the Ravenna Area and Rimini (I–IV Century AD). *International Journal of Osteoarchaeology* 14, 126–36.
- Ferembach, D., Schwidetzky, I. and Stloukal, M. (1980) Recommendations for age and sex diagnoses of skeletons. *Journal of Human Evolution* 9, 517–49.
- Fouts, H. N., Hewlett, B. S. and Lamb, M. E. (2005) Parent-offspring weaning conflicts among the Bofi farmers and foragers of central Africa. *Current Anthropology* 46, 29–50.
- Gamba, C., Jones, E. R., Teasdale, M. D., McLaughlin, R. L., Gonzalez-Fortes, G., Mattiangeli, V., Domboróczki, L., Kővári, I., Pap, I., Anders, A., Whittle, A., Dani, J., Raczky, P., Higham, T. F. G., Hofreiter, M., Bradley, D. G. and Pinhasi, R. (2014) Genome flux and stasis in a five millennium transect of European prehistory. *Nature Communications* DOI: 10.1038/ncomms6257 (accessed on 15th September 2014).
- Garraalda, M. D., Maureille, B. and Vandermeersch, B. (2014) Neanderthal infant and adult infracranial remains from Marillac (Charente, France). *American Journal of Physical Anthropology* 155, 99–113.

- Geber, J. (2014) Skeletal manifestations of stress in child victims of the Great Irish Famine (1845–1852): Prevalence of enamel hypoplasia, Harris lines, and growth retardation. *American Journal of Physical Anthropology* 155, 149–61.
- Gerling, C. and Francken, M. (2007) Das linearbandkeramische Gräberfeld von Schwetzingen. *Archäologische Informationen* 30, 43–50.
- Gerling, C. (2012) Das linearbandkeramische Gräberfeld von Schwetzingen, Rhein-Neckar-Kreis. *Fundberichte aus Baden-Württemberg* 32, 8–263.
- Goodman, A. H. and Rose, J. C. (1991) Dental enamel hypoplasias as indicators of nutritional stress. In M. A. Kelley and C. S. Larsen (eds.) *Advances in Dental Anthropology*, 279–93. Chichester, Wiley-Liss.
- Goodman, A. H., Martinez, C. and Chavez, A. (1991) Nutritional supplementation and the development of linear enamel hypoplasia in children from Tezonteopan, Mexico. *American Journal of Clinical Nutrition* 53, 773–81.
- Gowland, R. L., (2015) Entangled lives: Implications of the developmental origins of health and disease hypothesis for bioarchaeology and the life course. *American Journal of Physical Anthropology* 158, 530–40.
- Haak, W., Lazaridis, I., Patterson, N., Rohland, N., Mallick, S., Llamas, B., Brandt, G., Nordenfelt, S., Harney, E., Stewardson, K., Fu, Q., Mittnik, A., Bánffy, E., Economou, C., Francken, M., Friederich, S., Pena, R. G., Hallgren, F., Khartanovich, V., Khokhlov, A., Kunst, M., Kuznetsov, P., Meller, H., Mochalov, O., Moiseyev, V., Nicklisch, N., Pichler, S. L., Risch, R., Rojo Guerra, M. A., Roth, C., Szécsényi-Nagy, A., Wahl, J., Meyer, M., Krause, J., Brown, D., Anthony, D., Cooper, A., Alt, K. W. and Reich, D. (2015) Massive migration from the steppe was a source for Indo-European languages in Europe. *Nature* 522, 207–11.
- Hauzeur, A. (2009) First appearance of pottery in western Europe: The question of La Hoguette and Limburg ceramics. In D. Gherghiu (ed.) *Early Farmers, Late Foragers, and Ceramic Traditions: On the Beginning of Pottery in the Near East and Europe*, 176–88. Newcastle-upon-Tyne, Cambridge Scholars Publishing.
- Hedges, R., Bentley, R. A., Bickle, P., Cullen, P., Dale, C., Fibiger, L., Hamilton, J., Hofmann, D., Nowell, G. and Whittle, A. (2013) The supra-regional perspective. In P. Bickle and A. Whittle (eds.) *The First Farmers of Central Europe: Diversity in LBK Lifeways*, 343–84. Oxford, Oxbow Books.
- Hillson, S. and Bond, S. (1997) Relationship of enamel hypoplasia to the pattern of tooth crown growth: a discussion. *American Journal of Physical Anthropology* 104, 89–103.
- Hoshow, L. M. (1994) Immunologic aspects of human colostrum and milk – a misconception. *American Journal of Physical Anthropology* 94, 421–5.
- Kennedy, G. E. (2005) From the ape's dilemma to the weanling's dilemma: early weaning and its evolutionary context. *Journal of Human Evolution* 48, 123–45.
- King, J. A. (1996) Living and dying in the 17th century Chesapeake: previous research. In D. H. Ubelaker and J. A. King (eds.) *Living and Dying on the 17th century Patuxent Frontier*, 5–13. Crownsville, MD, The Maryland Historical Trust Press.
- King, J. A. and Ubelaker, D. H. (1996) Living and dying at Patuxent Point. In D. H. Ubelaker and J. A. King (eds.) *Living and Dying on the 17th century Patuxent Frontier*, 106–21. Crownsville, MD, The Maryland Historical Trust Press.
- Knipper, C. (2009) Mobility in a sedentary society: Insights from isotope analysis of LBK human and animal teeth. In P. Bickle and D. Hofmann (eds.) *Creating Communities: New Advances in Central European Neolithic Research*, 142–58. Oxbow, Oxford.
- Knipper, C. and T. D. Price (2010) Individuelle Mobilität in der Linearbandkeramik: Strontiumisotopenanalysen vom Gräberfeld Stuttgart-Mühlhausen „Viesenhäuser Hof“. In A. Krenn-Leeb, H.-J. Beier, E. Classen, F. Falkenstein and St. Schwenzer (eds.) *Mobilität, Migration und Kommunikation in Europa während des Neolithikums und der Bronzezeit. Beiträge der Sitzungen der*

Arbeitsgemeinschaften Neolithikum und Bronzezeit während der Jahrestagung des West- und Süddeutschen Verbandes für Altertumsforschung, 53–63. Langenweissbach, Beier and Beran. Archäologische Fachliteratur 2009.

- Kreuz, A., Marinova, E., Schäfer, E. and Wiethold, J. (2005) A comparison of Early Neolithic crop and weed assemblages from the *Linearbandkeramik* and the Bulgarian Neolithic cultures: Differences and similarities. *Vegetation History and Archaeobotany* 14, 237–58.
- Larsen, C. S., Craig, J., Sering, L. E., Schoeninger, M. J., Russell, K. F., Hutchinson, D. L. and Williamson, M. A. (1995) Cross Homestead: Life and death on the Midwestern frontier. In A. L. Grauer (ed.) *Bodies of Evidence: Reconstructing History through Skeletal Analysis*, 139–59. Chichester, Wiley-Liss.
- Lazaridis, I., Patterson, N., Mittnik, A., Renaud, G., Mallick, S., Kirsanow, K., Sudmant, P. H., Schraiber, J. G., Castellano, S., Lipson, M., Berger, B., Economou, C., Bollongino, R., Fu, Q., Bos, K. I., Nordenfelt, S., Li, H., de Filippo, C., Prüfer, K., Sawyer, S., Posth, C., Haak, W., Hallgren, F., Fornander, E., Rohland, N., Delsate, D., Francken, M., Guinet, J.-M., Wahl, J., Ayodo, G., Babiker, H. A., Bailliet, G., Balanovska, E., Balanovsky, O., Barrantes, R., Bedoya, G., Ben-Ami, H., Bene, J., Berrada, F., Bravi, C. M., Brisighelli, F., Busby, G. B. J., Cali, F., Churnosov, M., Cole, D. E. C., Corach, D., Damba, L., van Driem, G., Dryomov, S., Dugoujon, J.-M., Fedorova, S. A., Gallego Romero, I., Gubina, M., Hammer, M., Henn, B. M., Hervig, T., Hodoglugil, U., Jha, A. R., Karachanak-Yankova, S., Khusainova, R., Khusnutdinova, E., Kittles, R., Kivisild, T., Klitz, W., Kučinskas, V., Kushniarevich, A., Laredj, L., Litvinov, S., Loukidis, T., Mahley, R. W., Melegh, B., Metspalu, E., Molina, J., Mountain, J., Näkkäläjärvi, K., Nesheva, D., Nyambo, T., Osipova, L., Parik, J., Platonov, F., Posukh, O., Romano, V., Rothhammer, F., Rudan, I., Ruizbakiev, R., Sahakyan, H., Sajantila, A., Salas, A., Starikovskaya, E. B., Tarekegn, A., Toncheva, D., Turdikulova, S., Uktveryte, I., Utevska, O., Vasquez, R., Villena, M., Voevoda, M., Winkler, C. A., Yepiskoposyan, L., Zalloua, P., Zemanek, T., Cooper, A., Capelli, C., Thomas, M. G., Ruiz-Linares, A., Tishkoff, S. A., Singh, L., Thangaraj, K., Vilems, R., Comas, D., Sukernik, R., Metspalu, M., Meyer, M., Eichler, E. E., Burger, J., Slatkin, M., Pääbo, S., Kelso, J., Reich, D. and Krause, J. (2014) Ancient human genomes suggest three ancestral populations for present-day Europeans. *Nature* 513, 409–13.
- Lindstrom, D. P. and Berhanu, B. (2000) The effects of breastfeeding and birth spacing on infant and early childhood mortality in Ethiopia. *Social Biology* 47, 1–17.
- Lukes, A., Zvelebil, M. and Pettitt, P. (2008) Biological and cultural identity of the first farmers: Introduction to the Vedrovice bioarchaeology project. *Anthropologie* 46, 117–24.
- Lüning, J. (2000) *Steinzeitliche Bauern in Deutschland. Die Landwirtschaft im Neolithikum*. Bonn, Habelt.
- Macintosh, A. A., Pinhasi, R. and Stock, J. T. (2014a) Divergence in male and female manipulative behaviors with the intensification of metallurgy in central Europe. *PLoS one* 9, DOI 10.1371/journal.pone.0112116 (accessed on 15th September 2014).
- Macintosh, A. A., Pinhasi, R. and Stock, J. T. (2014b) Lower limb skeletal biomechanics track long-term decline in mobility across ~6150 years of agriculture in Central Europe. *Journal of Archaeological Science* 52, 376–390.
- Macintosh, A. A., Pinhasi, R. and Stock, J. T. (2017) Prehistoric women's manual labour exceeded that of athletes through the first 5500 years of farming in Central Europe. *Science Advances* 3, eaao3893. DOI: 10.1126/sciadv.aao3893 (accessed on 10th December 2017).
- Marciniak, A. (2005) *Placing Animals in the Neolithic: Social Zooarchaeology of Prehistoric Farming Communities*. London, UCL Press.
- Miszekiewicz, J. J. (2015) Linear enamel hypoplasia and age-at-death at Medieval (11th–16th centuries) St. Gregory's Priory and cemetery, Canterbury, UK. *International Journal of Osteoarchaeology* 25, 79–87.
- Modderman, P. J. R. (1988) The linear pottery culture: Diversity in uniformity. *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 38, 63–139.

- Molleson, T. (1994) The eloquent bones of Abu Hureyra. *Scientific American* 271, 70–5.
- Moschovis, P. P., Banajeh, S., MacLeod, W. B., Saha, S., Hayden, D., Christiani, D., Mino, G., Santosham, M., Thea, D. M., Gazi, S. and Hibberd, P. L. (2013) Childhood anemia at high altitude: risk factors for poor outcomes in severe pneumonia. *Pediatrics* 132, e1156–e1162.
- Oelze, V. M., Siebert, A., Nicklisch, N., Meller, H., Dresely, V. and Alt, K. W. (2011) Early Neolithic diet and animal husbandry: Stable isotope evidence from three *Linearbandkeramik* (LBK) sites in central Germany. *Journal of Archaeological Science* 38, 270–9.
- Ortner, D. J. (1998) Male-female immune reactivity and its implications for interpreting evidence in human skeletal paleopathology. In A. Grauer and P. Stuart-Macadam (eds.) *Sex and Gender in Paleopathological Perspective*, 79–92. Cambridge, Cambridge University Press.
- Ortner, D. J. (2003) Infectious diseases: Introduction, biology, osteomyelitis, periostitis, brucellosis, glanders, and septic arthritis. In D. J. Ortner (ed.) *Identification of Pathological Conditions in Human Remains*, 179–226. London, Academic Press.
- Pavúk, J. (1972) Neolithisches Gräberfeld in Nitra. *Slovenska Archeologia* 20, 5–105.
- Pechenkina, E. A., Vradenburg, J. A., Benfer, R. A. and Farnum, J. F. (2007) Skeletal biology of the central Peruvian coast: consequences of changing population density and progressive dependence on maize agriculture. In M. N. Cohen and G. M. M. Crane-Kramer (eds.) *Ancient Health: skeletal indicators of agricultural and economic intensification*, 92–112. Tallahassee, University Press of Florida.
- Pettitt, P. and Hedges, R. (2008) The age of the Vedrovice cemetery: The AMS radiocarbon dating programme. *Anthropologie* 46, 125–34.
- Phenice, T. W. (1969) A newly developed visual method of sexing the os pubis. *American Journal of Physical Anthropology* 30, 297–301.
- Price, T. D., Bentley, R. A., Lüning, J., Gronenborn, D. and Wahl, J. (2001) Human migration in the *Linearbandkeramik* of central Europe. *Antiquity* 75, 593–603.
- Price, T. D., Wahl, J., Knipper, C., Burger-Heinrich, E., Kurtz, G., and Bentley, R. A. (2004) Das bandkeramische Gräberfeld vom „Viesenhäuser Hof“ bei Stuttgart-Mühlhausen: Neue Untersuchungsergebnisse zum Migrationsverhalten im frühen Neolithikum. In Funda, D. T., (ed.) *Fundberichte aus Baden-Württemberg*, 23–58. Kommissionsverlag Konrad Theiss Verlag, Stuttgart, Germany.
- Raczky, P. and Anders, A. (2009) Settlement history of the Middle Neolithic in the Polgár micro-region (The development of the Alföld Linearband Pottery in the Upper Tisza Region, Hungary). In J. K. Kozłowski (ed.) *Interactions between different models of Neolithisation north of the Central European agro-ecological barrier*, 31–50. Kraków, Polska Akademia Umiejętności.
- Raczky, P. and Anders, A. (2012) Neolithic enclosures in eastern Hungary and their survival into the Copper Age. In F. Bertemes, P. F. Biehl and H. Meller (eds.) *Neolithische Kreisgrabenanlagen in Europa/Neolithic Circular Enclosures in Europe*, 271–309. Halle, Veröffentlichungen des Landesamtes für Denkmalpflege und Archäologie, Sachsen-Anhalt.
- Razzaque, A., Alam, N., Wai, L. and Foster, A. (1990) Sustained effects of the 1974–5 famine on infant and child mortality in a rural area of Bangladesh. *Population Studies* 44, 145–54.
- Roberts, C. and Manchester, K. (2005) *The Archaeology of Disease*. Stroud, Sutton Publishing.
- Rogers, J. and Dieppe, P. (1994) Is tibiofemoral osteoarthritis in the knee joint a new disease? *Annals of the Rheumatic Diseases* 53, 612–13.
- R Core Team (2014) *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. URL <http://www.R-project.org/>.
- Saqalli, M., Salavert, A., Bréhard, S., Bendrey, R., Vigne, J. D. and Tresset, A. (2014) Revisiting and modelling the woodland farming system of the Early Neolithic Linear Pottery Culture (LBK), 5600–4900 B. C. *Vegetation History and Archaeobotany* 23, S37–S50.
- Smith, B. H. (1991) Standards of human tooth formation and dental age assessment. In M. A. Kelley and C. S. Larsen (eds.) *Advances in Dental Anthropology*, 143–68. Chichester, Wiley-Liss.

- Sofaer, J. R. (2006) *The body as material culture: A theoretical osteoarchaeology*. Cambridge, Cambridge University Press.
- Stäuble, H. (2005) *Häuser und absolute Datierung der ältesten Bandkeramik*. Bonn: Habelt.
- Stuart-Macadam, P. (1987) Porotic hyperostosis: New evidence to support the anemia theory. *American Journal of Physical Anthropology* 74, 521–6.
- Stuart-Macadam, P. (1991) Anemia in Roman Britain: Poundbury Camp. In H. Bush and M. Zvelebil (eds.), *Health in Past Societies: Biocultural interpretations of human skeletal remains in archaeological contexts*, 101–13. British Archaeological Reports International Series 567. Oxford, Archaeopress.
- Stuart-Macadam, P. (1998) Iron deficiency anemia: Exploring the difference. In A. Grauer and P. Stuart-Macadam (eds.) *Sex and gender in paleopathological perspective*, 45–63. Cambridge, Cambridge University Press.
- Suckling, G. and Thurley, D. C. (1984) Developmental defects of enamel: factors influencing their macroscopic appearance. In R. Fearnhead and S. Suga (eds.) *Tooth Enamel Vol. 4*, 347–62. New York, Elsevier.
- Temple, D. H. and Goodman, A. H. (2014) Bioarcheology has a “health” problem: Conceptualizing “stress” and “health” in bioarcheological research. *American Journal of Physical Anthropology* 155, 186–91.
- Waldron, T. and Rogers, J. (1991) Inter-observer variation in coding osteoarthritis in human skeletal remains. *International Journal of Osteoarchaeology* 1, 49–56.
- Walker, P. L., Bathurst, R. R., Richman, R., Gjerdrum, T. and Andrushko, V. A. (2009) The causes of porotic hyperostosis and cribra orbitalia: A reappraisal of the iron-deficiency anemia hypothesis. *American Journal of Physical Anthropology* 139, 109–25.
- Weiss, R., Fogelman, Y. and Bennett, M. (2004) Severe vitamin B12 deficiency in an infant associated with a maternal deficiency and a strict vegetarian diet. *Journal of Pediatric Hematology and Oncology* 26, 270–1.
- Whittle, A., Bentley, R. A., Bickle, P., Dočkalová, M., Fibiger, L., Hamilton, J., Hedges, R., Mateiciucová, I. and Pavúk, J. (2013a) Moravia and western Slovakia. In P. Bickle and A. Whittle (eds.) *The First Farmers of Central Europe: Diversity in LBK Lifeways*, 101–58. Oxford, Oxbow Books.
- Whittle, A., Anders, A., Bentley, R. A., Bickle, P., Cramp, L., Domboróczki, L., Fibiger, L., Hamilton, J., Hedges, R., Kalicz, N., Kovács, Z. E., Marton, T., Oross, K., Pap, I. and Raczky, P. (2013b) Hungary. In P. Bickle and A. Whittle (eds.) *The First Farmers of Central Europe: Diversity in LBK Lifeways*, 49–100. Oxford, Oxbow Books.
- Wood, J. W., Milner, G. R., Harpending, H. C. and Weiss, K. M. (1992) The osteological paradox: Problems inferring health from skeletal populations. *Current Anthropology* 33, 343–70.
- Wood, L. (1996) Frequency and chronological distribution of linear enamel hypoplasia in a North American Colonial skeletal sample. *American Journal of Physical Anthropology* 100, 247–59.
- Zvelebil, M. and Pettitt, P. (2008) Human condition, life, and death at an early Neolithic settlement: Bioarchaeological analyses of the Vedrovice cemetery and their biosocial implications for the spread of agriculture in central Europe. *Anthropologie* 46, 195–218.

Consuming bodies: Bowls, bones, food and fire in Early Neolithic Britain

Emilie Sibbesson

‘Our most intimate contact with the natural environment occurs when we eat it’
(Fernández-Armesto 2002: ix)

Fifteen years ago, Alasdair Whittle (2003, 30) pointed out that our understanding of eating in the Neolithic is a ‘sad reflection’ of the wealth of available food evidence. Since then, analytical techniques that target evidence of eating, food preparation, and overall diet have continued to be improved and they are more widely applied today. As a result, increasingly detailed food evidence is emerging. Carbon and nitrogen stable isotopes from human and animal bodies and lipid residues from ceramics have had the biggest impact. In this paper, I consider some implications of these two growing bodies of data on the British Neolithic, although focus is on the wider context rather than on the data itself.

First I review the debate prompted by the first dietary stable isotope studies of British Mesolithic and Neolithic human remains, which highlighted the need for closer integration of laboratory data with archaeological and social-scientific context. As our laboratory techniques become ever more advanced and specialised, the division of labour between natural- and social-scientific archaeology (Jones 2002) risks growing rather than eroding. A focus on food reveals similar analytical divides in sociology (Wood 1996, 2) and anthropology (Mintz & Du Bois 2002, 101). Equally, the natural sciences were not included in a recent multidisciplinary overview of food studies on the grounds that ‘most biologists, food chemists, and other scientists do not yet participate in the dialogue of critical food studies’ (Albala 2012, xv). Nonetheless, food sustains both social and biological life, and its study can help us overcome object-subject binarism (Hamilakis 2013, 82).

Reconciliation of different datasets is facilitated by considering the human body as the juncture where much of our food evidence meet, from ingredients and technologies to residues, phytoliths in dental calculus, and bone collagen. In the second part of this paper, I consider Early Neolithic pottery as an important ‘technology of the body’ (Hamilakis 1999), thereby adding an artefactual dimension to the papers presented in this volume. This approach is prompted by recent accumulation of lipid residue studies of British Neolithic pottery (*e.g.* Copley *et al.* 2005; Cramp *et al.* 2014; Craig *et al.* 2015) and the need to situate the new evidence within ‘traditional’ ceramic studies. New laboratory food evidence needs to be considered jointly with technology, otherwise we risk producing increasingly detailed lists of species consumed but only marginally enhanced social accounts (Milner 2006, 72).

CONFLICTING BODIES

Food signals

A holistic approach to food in the past needs to draw on biochemical, osteological, artefactual, architectural, faunal, environmental, and botanical categories of evidence. We also need some awareness of social anthropological approaches to food and a degree of historical, ethnographic, and experimental understanding of pre-industrial techniques of food processing, cooking, and storage. This is a tall order, but interpretive frameworks that help us capture, compare, and contextualise many of these aspects have been put forward (e.g. Isaksson 2010; Morrison 2012). Isaksson's (2010, 5) framework outlines the entire food process in a model of 'the flow of food culture signals into deposition in an archaeological context'. Stages of the food process are considered as separate contexts; from, for example, storage and dish contexts to meals and residues. Each stage or context has its own archaeological signal, although there is overlap between the stages and they are not equally represented in the material record. Ultimately, the food that is eaten ends up within the 'diet/anatomical context', from which we obtain data from teeth and bones. Crucially, food signals from different stages of this process do not necessarily mirror and support one another. In other words, evidence related to, for example, food storage may not correspond to what butchery waste from a refuse context tells us, even within the same site. Diets and the many food-related activities that people engaged in are far too complex, and our ability to recover their traces depends on aspects such as spatial arrangements of food practices and the conditions of preservation in the archaeological record.

Dietary stable isotopes and the Mesolithic–Neolithic transition

The potential for discrepancy between food signals is greater at larger scales of analysis. This became evident in the debate that followed the publication of a number of bone chemistry studies of human remains from the British Mesolithic and Neolithic in the late 1990s and early 2000s. In a series of papers, the results of carbon and nitrogen stable isotope analyses of human bone collagen were presented in support of rapid dietary change at the Mesolithic–Neolithic transition (e.g. Richards & Mellars 1998; Richards & Hedges 1999; Schulting & Richards 2002a; 2002b). The stable isotope values indicated strong reliance on marine foods in the Mesolithic but terrestrial-based diets in the Neolithic, which seemed to support the idea of rapid introduction and uptake of domestic food species around 4000 cal BC. Such rapid dietary change was interpreted as a result of farming communities migrating to Britain from mainland Europe. This interpretation was conspicuous as other explanations of the transitional changes, which focused on gradual and localised incorporation of Neolithic ways of life by indigenous groups, had gained momentum in the preceding decade (e.g. Thomas 1988; Armit & Finlayson 1992). Schulting and Richards (2002b, 147) therefore argued that the new stable isotope data challenged an 'emerging orthodoxy' among prehistorians.

However, it was not primarily this challenge to the indigenous-change model that caused debate (but see Thomas 2003). Instead, the stable isotope scenario of rapid dietary change was questioned because it was difficult to reconcile with other lines of dietary evidence. There is faunal evidence for both terrestrial food consumption in the Mesolithic and marine

food input in the Neolithic (Milner *et al.* 2004). Mesolithic shell middens frequently contain remains of terrestrial wild game. Milner *et al.* (2004, 22) argued that to 'look more widely for sources of error' would help explain this discrepancy between the stable isotope values from human remains and other kinds of dietary evidence. The most conspicuous potential sources of error related to small sample sizes (Milner *et al.* 2004, 22) and the fact that the temporality of the transition was never satisfactorily defined despite it being repeatedly described as 'rapid' (Milner *et al.* 2006, 457). In terms of how the data was produced and interpreted, Milner *et al.* (2004, 26) highlighted a few aspects that may not have been taken into account: for example, consumption of terrestrial animals that have been fed on marine foods may result in detectable proportions of marine protein in human bone collagen. Conversely, direct consumption of marine animals may not yield a strong isotopic marine food signal if the marine environment in question is relatively rich in terrestrial carbon.

Consumer versus consumed

These potentially complicating factors relate to isotope ecology and the ways in which our skeletons incorporate dietary protein, and they are better understood today (*e.g.* Goude & Fontugne 2016). The reason for revisiting the debate here is not methodological. Instead, I wish to highlight its implications for our approaches to food evidence. For example, what do we do when evidence from the bodies of the consumers does not match the remains of those consumed? In this case, the 'mismatch' was approached by questioning the relevance and validity of the different lines of evidence. We have seen that Milner *et al.* (2004; 2006) challenged both production and interpretation of the stable isotope values. On the other hand, Richards and Schulting (2006, 445) dismissed the faunal evidence for marine food consumption in the Neolithic as 'largely irrelevant'. Since faunal remains are what is left of 'individual meals' (Richards & Schulting 2006, 445) they are 'anecdotal' (Richards 2003, 31) to the reconstruction of overall diet. A hierarchy of archaeological evidence emerges as the significance of Mesolithic versus Neolithic shell mounds is determined by how much marine food input is detected in roughly contemporary stable isotope values. Also indicative of how different kinds of food evidence are variously valued is the fact that both human and animal bodies have been described as providing the most 'direct' measure of prehistoric diets (*e.g.* Richards & Schulting 2006, 445; Smith & Brickley 2009, 118; *qf.* Albarella & Serjeantson 2002, 33; Rowley-Conwy 2000). Information about specific individuals is archaeologically compelling, but a stable isotope value is a sweeping measure of what the individual ate. Such a food signal is 'the sum of production, preparation, representation, and consumption over a period of time' (Isaksson 2010, 5, original emphasis). Notably, but perhaps counterintuitively, the fact that relatively few individuals from the British Mesolithic and Neolithic could be included in the stable isotope studies mentioned here may have boosted the impression of a comprehensive dietary shift. Similar work in elsewhere in Europe (*e.g.* Lubell *et al.* 1994; Bonsall *et al.* 2000; Borić *et al.* 2004; Lidén *et al.* 2004; Fischer *et al.* 2007) indicates that larger sets of samples tend to make interpretation less straightforward and more complex, rather than the other way round. For example, studies of Siberian (Katzenberg & Weber 1999), Swedish (Lidén *et al.* 2004; Eriksson 2004), and Portuguese (Fontanals-Coll *et al.* 2014) skeletal remains have shown that the variation

between marine and terrestrial diets is often geographical rather than chronological or cultural. In the Balkans, a clearly discernible ‘subsistence dichotomy’ between the Mesolithic and Neolithic could not be sustained when more individuals were analysed (Bonsall *et al.* 2000; *cf.* Borić *et al.* 2004). Contradiction between different lines of food evidence does not mean that one of them is flawed, and it need not motivate a ranking of evidence into more and less archaeologically relevant. Instead, the variation reflects the complexity of past food practices and the fact that we are looking at the same issues but from different angles and scales of analysis (Barberena & Borrero 2005; Olsson & Isaksson 2008), and using different terminology (Table 4.1). The potential for discrepancy between food signals also means that we cannot use one line of evidence as a crosscheck on another.

The debate prompted by the first sets of dietary stable isotope evidence from British Mesolithic and Neolithic human remains highlighted that ‘diet’ *on its own* is a superficial guide to foodways in the past. In the second part of the paper I consider another body of scientific data that is accumulating and has implications for social narratives of the Neolithic, namely that from lipid residue analysis of ceramics.

DESIGNING BODIES

Material culture often acts as an interface between our bodies and the world around us. Objects intended for cooking and eating need to interact well with both our bodies and our food (Wilson 2013). For example, a saucepan with a plastic handle and a thick base combines aspects that work well with our hands, the heat source, and the food itself. Forks are sharp enough to pierce our food but blunt enough not to hurt us. However, compromise is inevitable; no design ticks all the boxes (Wilson 2013, 57). Prongs of plastic forks tend to be sharper than those of metal forks to compensate for the more bendy plastic. Enamelled cast iron pans have many advantages but they are not non-stick (Wilson 2013, 60). Such a perspective can be applied to the study of Neolithic ceramics if we think of them as culinary equipment rather than as chronological or typological markers (Jones 1999; Bray 2003; Beaudry 2013). Evidence from organic residues, traditional ceramic study, and contextual analysis indicates that pottery was indeed primarily made and used as culinary tools in the British Early Neolithic. This prompts us to consider not only the makers of pottery but also its users, and the interplay between them.

Cooking potters

Lipid residue analysis tends to yield absorbed residues in around half of sampled vessels (Pollard *et al.* 2007, 149). That figure may be up to 80 per cent if ‘domestic cooking pottery’ is specifically targeted in the sampling process (Evershed 2008, 904), which seems applicable to the British Neolithic (Copley *et al.* 2005; Sibbesson & Isaksson forthcoming). The three main categories of pottery use are storage, processing, and transfer of food and other commodities (Rice 1987, 207). Processing is most likely to result in absorption of lipids within the clay matrix of unglazed vessels (Roffet-Salque *et al.* 2017). If we further define the difference between food processing and cooking as the latter involving heat alteration

Table 4.1: *A food vocabulary for prehistory? Some of these terms are widely used in archaeology but variously defined. Others are little known but may be effective. This list is by no means definitive or exhaustive but it is useful to consider these terms in comparison to one another and to our various bodies of food evidence.*

Term	Definition	Reference	Examples of archaeological evidence	Macro-context
Diet	Plant and animal species that are eaten by a group or an individual over a period of archaeological time (i.e. the Neolithic) or within an individual lifetime.		Carbon and nitrogen stable isotope values from bone collagen; botanical and faunal remains	
Food culture	‘the social context of consumption, the shared values and symbolic meanings that inform food choices, and the rituals and daily routine’	Albala 2011, x	All	
Foodways	‘the cultural, social, and economic practices that related to the production and consumption of food, from procurement and preparation to presentation, consumption and discard’	Metheny 2015, 221	All	
Cuisine	‘the whole sequence of operations which culminates in the presentation of prepared food, and represents the transformation of raw ingredients’; ‘if a people cooks and recognises a common set of recipes and discusses them with a common vocabulary, then it should be deemed a cuisine’	Sanitch 1988, 38; Albala 2011, x	Material culture; organic residues	
Gastronomy	‘the how, what and why of eating and drinking but it is <i>not</i> directly focused on food (...) Rather, gastronomy is concerned with consumption, the eating of food and drinking of beverages, and this means that its focus is on people as much as on food’	Sanitch 2007, 53	Material culture related to food and drink consumption, e.g. drinking cups	
Food processing	Cooking and other techniques such as butchering, cutting, pickling, salting, fermenting, freezing, grinding, milling	Rodríguez-Alegria and Graff 2012, 2	Material culture, e.g. querns and salt briquetage; structures, e.g. pits; macrobotanical remains	
Cooking	‘... food preparation processes that involve heat alteration of foodstuffs, usually by roasting, boiling, frying, smoking, or baking’	Rodríguez-Alegria and Graff 2012, 2	Organic residues; material culture; structures, e.g. smoking huts and ovens; heat-altered faunal remains	
Meal companionship	‘an important entity [that] provides individuals with a social and cultural identity as “we who eat together”. An individual may be a member of several meal companionships even during a single day, e.g. based on work, duties, rank, gender, age, etc. (...) Each meal companionship knows what a specific dish should taste like, a knowledge that is recreated at each meal’	Isaksson 2010, 6	Material culture related to group size and food and drink consumption, e.g. ceramic vessel volumes; stratigraphic context	Micro-context

of foods through, for example, frying, boiling, and baking (Rodríguez-Alegría & Graff 2012, 2) then it is cooking that is most likely to leave a lipid signal. This means that the actual proportion of the ceramic repertoire that was used with food is probably higher than is indicated by lipid residue analysis. With this in mind, it is likely that pottery was primarily, and in some settings exclusively, associated with food in the British Neolithic, at least in the early part of the period. Later on, the ceramic repertoire expanded to include, for example, cremation urns and crucibles for metal smelting. There are instances of non-food uses of pottery in the Early Neolithic as well, like at the Carreg Coetan Arthur chambered tomb in Pembrokeshire where cremated human bone was found in association with sherds of an Early Neolithic bowl, although that vessel may have been used for cooking before its final deposition with the burial (Rees 2012). In the Upper Thames region, much Early Neolithic pottery is associated with burials and mortuary enclosures, but here it also appears to have been used to cook, eat, or drink, albeit in a ceremonial setting (Barclay 2002, 88).

Despite – or indeed because of – this intimate connection between food and pottery in the Early Neolithic, the pottery repertoire is relatively conservative throughout the fourth millennium cal BC (Gibson & Woods 1997, 63). We do not find the plates, jars, flasks, or strainers that sometimes occur in later periods or in the Neolithic elsewhere in Europe. For example, the Ertebølle ceramic repertoire included plate-like ‘blubber lamps’ as well as bowls, and the Funnel Beaker set contained different shapes of flasks and jars (Gebauer 1995). In Britain, the round-based bowl dominated for almost a thousand years. This may be partly because the set of culinary equipment involved a wide range of organic materials in addition to pottery, including items made of wood, plants, intestinal materials, and skins. A rare example is the rectangular c. 25cm long wooden ‘dish’ found at the Sweet Track in the Somerset Levels (Coles & Coles 1989, 30). These materials were used for specific culinary tasks, including storage and processing, that required specialist knowledge and carefully designed equipment. This is probably an aspect of Neolithic everyday life where we would see strong continuity from the Mesolithic, had these materials survived.

So pottery is the only component of the culinary equipment repertoire that survives today, and it is a relatively uniform set of material over a long period of time. Nonetheless, these humble bowls can shed some light on cooking and eating if we consider the ways in which they were made to interact with bodies, heat, and food. Potters and cooks would have been intimately familiar with a number of physical and chemical processes that clay, food, and firewood go through during pottery manufacture and use. This expertise can be thought of as ‘folk physics’ and ‘bush chemistry’ (Povellini 2000; Hurcombe 2014, 119). For example, the quantity, smell, and flavour of smoke from a fire depends on the type of firewood that is used, so not all woods are equally suited for preserving meat, firing pottery, curing hides, or discouraging insects (Hurcombe 2014, 120).

Pottery manufacture in the British Early Neolithic was specialised in the sense that potters knew what kinds of clays, temper materials, and vessel forms were best suited for various tasks (Arnold 2000). However, it was not specialised in wider, economic terms; potters did not depend on their product to subsist (Costin 2000). Instead, pottery was made by members of the household or community. It was probably made as and when it was needed, perhaps on a seasonal basis related to the weather and to proximity of good clay deposits during a yearly or seasonal orbit. In contrast, in a specialised setting producers

and consumers of pottery do not generally belong to the same household (Santacreu 2014, 251). For the British Early Neolithic, I would suggest that potters and consumers of pottery often did belong to the same ‘household’. Indeed, those who made pots probably also used them (Sibbesson 2014). Therefore, the choices made by potters were influenced by cooking and eating practices, and vice versa. In other words, ‘while the production process may well have been important to the potter, far more significant to everyone else would be the suitability of a vessel for its intended use’ (Darvill 2004, 195). If the potter and cook were often the same person, what we see as long-term ceramic typologies would have been closely entangled with food practices.

Evidence of pottery manufacture have been found in pre-barrow contexts at Early Neolithic Ascott-under-Wychwood in Oxfordshire, in the form of a pot that probably exploded during firing and pieces of fired clay that may be wasters (Barclay & Case 2007, 266, 277). This suggests that pottery manufacture was ‘perhaps not the result of a single controlled and organised event’ (Barclay & Case 2007, 277). Hammerstones that may have been used for crushing temper material were found at the pits sites of Cotswold Community (Lamdin-Whymark 2010) and Horcott Pit (Lamdin-Whymark *et al.* 2009) in Gloucestershire, and South Stoke in Oxfordshire (Cramp & Lamdin-Whymark 2005). At the latter site, two such hammerstones were found along with burnt, unworked flint. These kinds of finds suggest that the various tasks associated with potting were prepared and undertaken alongside other routine activities. However, to stress the localised and intermittent nature of potting in the Early Neolithic is not to downplay the role of especially skilled potters. That is, bowls made by certain potters may have become particularly desirable, both within and beyond the immediate community. Aesthetics may have been one factor that contributed to the social ‘status’ of a pot, but pots that were good to cook with may also have been highly valued.

Hot and cold

One aspect that may tell us whether pots were intended for cooking is base design. Conical vessels and bowls with round and pointed bases are more suited to being placed on, above, or adjacent to a fire than flat-based vessels. The characteristically pointed bases of Ertebølle pottery made them sit stably within hot embers, as illustrated at Flynderhage in Denmark where five such vessels were found in situ in ash layers (Gebauer 1995, 102). Round and pointed bases sit better on uneven ground, whereas flat-based pots need relatively flat surfaces. If the round-based bowls of the British Early Neolithic were in contact with heat from flames, embers, or hot rocks, they would need good thermal shock resistance. This enables pots to withstand the sudden temperature changes that occur when they are placed on or removed from a heat source (Rye 1981, 27). This is because the exterior and interior wall surfaces heat up and cool down differently. If the heat source is outside the pot (*i.e.* unless pot boilers are used) the exterior surface heats up and expands quicker, which leads to cracks on the interior. Subsequently, as the pot is removed from the heat, the exterior can crack as it cools down quicker than the interior, which is kept hot by the content of the pot. The cumulative effect of these processes leads to stresses within the wall that can lead to spalling or breakage (Rye 1981, 27). Skilled potters can improve a vessel’s thermal

shock resistance by attending to aspects like wall thickness, mineral and organic inclusions in the ceramic paste, and overall vessel shape, during manufacture (Rye 1981, 27). In terms of shape, an angle or change in direction in the ceramic wall is a weak point, so straight-sided or globular vessels that do not have sharp angles are more resistant to thermal shock. Round-based pots may be more conducive to repeated heating and cooling as a flat base involves such an angle in the pot's profile. Sassaman (1995) has reviewed which vessel forms are best suited to direct- versus indirect-heat moist cooking, in relation to the emergence and spread of pottery in the North American south-east. Direct-heat refers to cooking on or over a fire, whereas indirect-heat cooking involves the transfer of heat from fire to container via a 'solid medium', *i.e.* cooking stones or hot rocks (Sassaman 1995, 228). Sassaman found that deep bowls are more likely to have been used for direct-heat cooking, while flat-based basins are better suited for cooking with hot rocks. In addition to vessel shape, wall thickness influences a pot's ability to withstand thermal shock. A thin-walled pot is less prone to thermal shock breakage because there is less room for temperature gradation within a thin wall (Manson 1995, 72). Thicker walls, on the other hand, gives a pot better mechanical strength. The third factor that influences thermal shock resistance is the make-up of the ceramic paste itself. Both organic and mineral inclusions play a part here; the former generally burn out during firing of the pot, which creates a porous fabric by leaving voids that can halt the cracks that develop during thermal stress. Mineral inclusions will have an impact as they come in different shapes, degrees of angularity, and rate of heat expansion. For example, quartz will expand more than plagioclase feldspar (Rye 1981, 27), so 'grit' as temper should make a pot more resistant to thermal stress than most sands. Likewise, calcite materials expand at rates similar to fired clay (Rye 1981, 27) so shell is a good temper for cooking pots. Shell temper may also burn out during firing to create a porous fabric.

Early Neolithic cooking bowls

Gibson and Woods (1997, 36–7) have argued that 'there is very little evidence in Britain [...] to indicate that potters were even aware of the [thermal shock] problem, let alone knew how to overcome it'. For this reason, round-based pots were 'quickly replaced by flat-based ones, even for cooking' (Gibson and Woods 1997, 37). However, it is debatable whether the change from rounded to flat bases after around one thousand years constitutes a quick replacement, and it is likely that potters of the fourth millennium deliberately made round-based vessels to improve their usefulness as culinary tools. Another way in which potters enhanced the cooking capabilities of bowls was in the selection of temper materials. Cleal (1995) has demonstrated that Early and Middle Neolithic pottery in Wessex tends to be flint or shell tempered. Sand-tempered vessels are much less frequent; sand was the only added temper in only around 8 per cent of fabrics, and these fabrics were mainly used to make small vessels (Cleal 1995, 187). This may be because quartz-rich sandy fabrics are less well suited for cooking. This seems to apply beyond Wessex as well; at the Early Neolithic pit site of Kilverstone in Norfolk, smaller bowls and cups were made of sandy and lightweight, vesicular fabrics respectively (Knight 2006; Sibbesson 2012), which may reflect that these smaller vessels were not intended for cooking. Cleal (1995) considered

the disadvantages of pottery made from calcareous fabrics – i.e. those tempered with shell, limestone, or chalk – as they can be prone to spalling or disintegration during firing. She argued that it is unclear how potters approached this issue, but also pointed out that ‘the most interesting feature of the use of calcareous fabrics is not how the problems were overcome, but that they were considered by the potters as worth overcoming’ (Cleal 1995, 191–92). The fact that calcareous fabrics occur along with flint-tempered wares suggests that in most cases it is not simply a matter of calcareous materials being the only available option. The difficulties associated with firing calcareous fabrics may have been ‘reduced to acceptable proportions’ (Cleal 1995, 192) because, once fired, these pots were good to cook with. The fact that the potter’s choice of ceramic temper material is not necessarily determined by what is locally available is ‘a point worth labouring’ (Cleal 1995, 192). In ‘folk physics’ terms, potters were well aware of the characteristics of clays, temper materials, heat sources, temperatures, foods, and liquids.

Jones’ (1999) study of Neolithic ceramics in Orkney illustrates this deliberate interplay between potter and cookery technique. Here, the two Early Neolithic forms – shallow round-based Unstan bowls and deep, straight-sided plain bowls – were used in different ways. The Unstan ware bowls tend to have soot deposits around the rim, whereas the plain bowls are sooted on the base and lower body (Jones 1999, 61). This suggests that the former were placed within embers but the latter were designed for suspension above a fire. The presence of lugs on some plain bowls, in Orkney and elsewhere, supports this. Pierced lugs are especially useful for this purpose, although solid lugs could still be used for suspension if a cord is tied underneath (Gibson & Woods 1997, 206). It is worth considering whether carinations and deep necks in some cases also filled this function. Given that lipid residue analysis of Neolithic pottery tends to indicate that the majority of vessels were used for cooking, it is perhaps surprising that lugs are not more common. Moreover, hanging pots were probably used for storage and transport as well as for cooking (Fig. 4.1). In contrast, the conical straight-sided pots of many hunter-gatherer ceramic traditions (*e.g.* Skandfer 2010; Hommel *et al.* 2016) are poorly suited for suspension. As we have seen, these vessels are more likely to have been pressed into hot embers and sand.

Evidence from lipid residues of Early Neolithic pottery supports the points made above. For example, lugged pots from the pit sites of South Stoke and St Helen’s Avenue in Benson, both in Oxfordshire, yielded high quantities of absorbed lipids (Sibbesson & Isaksson forthcoming). Moreover, detection of compounds that form when foods rich in saturated fats are heated is relevant to the question of cooking. These mid-chain ketones are formed when acyl lipids are heated above 270°C (Evershed *et al.* 1995; Raven *et al.* 1997). In their study of Neolithic pottery from northern mainland Britain and the Western and Northern Isles, Cramp *et al.* (2014, 3) detected such evidence of cooking in around one-third of sherds. Mid-chain ketones were found in a similar proportion of samples of Early and Middle Neolithic pottery from the Upper Thames Valley (Sibbesson & Isaksson forthcoming). It may be tenuous to take these figures at face value but a ceramic repertoire in which around one-third of pots was used for this kind of repeated high-temperature cooking of fatty foods is plausible.

Lastly, in terms of cold foods, it is worth considering Darvill’s (2004, 196) point that pots made from soft-rock and organic tempered fabrics are ideal for cool storage of liquids



Fig. 4.1: Replica of a hanging Neolithic pot in a reconstructed house at the Ekebyen Fornstidsby outdoor museum of prehistory, Sweden.

such as blood and milk. Many Neolithic pottery assemblages contain significant proportions of such fabrics, which are those tempered with for example chalk, limestone, shell, bone, dung, and chaff. This kind of fabric may even have been somewhat more widespread than we tend to observe as the temper itself may disintegrate due to weathering or acidic

soils, resulting in what is generally recorded as ‘vesicular’ wares (Darvill 2004, 199). If some of the soft-rock tempered bowls were indeed used to store milk, it is likely that this storage was itself a form of processing. Milk is easily transformed into more digestible and storable ferments such as kefir and soured milk by adding a starter culture and letting the mixture sit for a day or two. Similar roles have been suggested for certain vessel forms and sizes in the Funnel Beaker repertoire from sites on the German Baltic coast (Saul *et al.* 2014). Here, jars and flasks with narrow necks may have been used for producing fermented milk products (Saul *et al.* 2014, 208). The vast diversity of traditional fermented dairy foods across the Old World does indeed indicate that these processing techniques are ancient, and it is likely that fresh milk consumption was an exception rather than the norm even in prehistoric societies. For example, soured milk can be drained and dried to form *kashk*-type foods, which are still common across central Asia and the Near East. In parts of Turkey in the medieval period, such loaves of dried sour milk or yoghurt were mixed with cracked wheat to produce a durable and nourishing food that was eaten during winter (Lewicka 2011, 230). For consumption, the product had to be soaked in hot water to be used as in various one-pot meat preparations. At present, the idea that dairy foods were used in such ways in the European Neolithic is speculative, but it is also intriguing and it highlights the potential value of merging archaeological residue analysis with food history and culinary history.

CONCLUSION

Social interpretive frameworks for food evidence may not have developed apace with the set of laboratory techniques that target residues, stable isotopes, and phytoliths, but such frameworks are now emerging and have been applied to the European Neolithic (*e.g.* Saul *et al.* 2014; Craig *et al.* 2015; Bickle 2016). Hamilakis’ (2013) discussion of sensory experience in the past, which is necessarily body-centred and often culinary, is also relevant. For instance, he points out that contrary to our contemporary objectification of food as something external, the act of eating in fact blurs the distinction between self and other (2013, 82). This act, and the activities of food preparation and cooking, are performative and participatory (2013, 83) in both ceremonial and everyday contexts (2013, 83). The knowledge and technical skills required to recognise, process, and cook food for storage and consumption is social capital.

In this paper, I have considered cooking and potting as entangled sets of such social capital. The close association between food and pottery in the Early Neolithic may be an obvious point, but it is helpful to reiterate it. We frequently study prehistoric pottery in terms of manufacture, distribution, and discard, with little or no discussion of how it was used. Today, organic residue analysis can help fill the gap between manufacture and discard. This means not only new insights into pottery use but also that an important source of information about food now comes from the ceramic record. Approaching pottery as culinary tools brings those datasets closer together. These details are the micro-contexts of Neolithic food cultures, and they help populate the broad measure of diet provided by stable isotope values from human and animal bodies. The first dietary stable isotope

evidence for the British Mesolithic and Neolithic prompted a debate that highlighted the need for a more explicit and resilient interpretive framework for prehistoric foodways and a better defined vocabulary. The challenge to produce holistic and nuanced accounts increases as our set of analytical techniques expands. Neolithic people were not only consumers of food but also cooks, makers of food technology, meal participants, and keepers of crucial food safety knowledge, so to place the human body at the centre of our culinary frames of reference will help us come to terms with the complexity that is emerging.

ACKNOWLEDGEMENTS

Thank you to Andrew Meirion Jones, Penny Bickle, and Tim Darvill for valuable comments on an earlier version of this paper.

REFERENCES

- Albala, K. (ed.) (2011) *Food Cultures of the World Encyclopedia*. Santa Barbara, Greenwood.
- Albala, K. (ed.) (2012) *Routledge International Handbook of Food Studies*. New York, Routledge.
- Albarella, U. and Serjeantson, D. (2002) A passion for pork: Meat consumption at the British Late Neolithic Site of Durrington Walls. In P. Miracle and N. J. Milner (eds.) *Consuming Passions and Patterns of Consumption*, 33–49. Oxford, Oxbow Books.
- Armit, I. and Finlayson, B. (1992) Hunter-gatherers transformed: The transition to agriculture in northern and western Europe. *Antiquity* 66, 664–76.
- Arnold, D. (2000) Does the standardization of ceramic pastes really mean standardization? *Journal of Archaeological Method and Theory* 7, 333–75.
- Barberena, R. and Borrero, L. A. (2005) Stable isotopes and faunal bones. Comments on Milner et al. (2004). *Antiquity* 79, 191–95.
- Barclay, A. (2002) Ceramic lives. In A. Woodward and J. D. Hill (eds.) *Prehistoric Britain: the Ceramic Basis*, 85–95. Oxford, Oxbow Books.
- Barclay, A. and Case, H. (2007) The Early Neolithic pottery and fired clay. In D. Benson and A. W. R. Whittle (eds.) *Building Memories: The Neolithic Cotswold Long Barrow at Ascott-under-Wychwood, Oxfordshire*, 263–82. Oxford, Oxbow Books.
- Beaudry, M. C. (2013) Mixing food, mixing cultures: Archaeological perspectives. *Archaeological Review from Cambridge* 28, 285–97.
- Bickle, P. (2016) Capturing Diversity in Neolithic Diets. In L. Amkreutz, F. Haack, and D. Hofmann (eds.) *Something Out of the Ordinary? Interpreting Diversity in the Early Neolithic Linearbandkeramik and Beyond*, 89–122. Newcastle upon Tyne, Cambridge Scholars Publishing.
- Bonsall, C., Cook, G., Lennon, R., Harkness, D., Scott, M., Bartosiewicz, L. and McSweeney, K. (2000) Stable isotopes, radiocarbon and the Mesolithic–Neolithic transition in the Iron Gates. *Documenta Praehistorica* 27, 119–32.
- Borić, D., Grupe, G., Peters, J. and Mikić, Ž. (2004) Is the Mesolithic–Neolithic subsistence dichotomy real? New stable isotope evidence from the Danube Gorge. *European Journal of Archaeology* 7, 221–48.
- Bray, T. L. (2003) To dine splendidly: Imperial pottery, commensal politics, and the Inca State. In T. L. Bray (ed.) *The Archaeology and Politics of Food and Feasting in Early States and Empires*, 93–142. New York, Kluwer Academic/Plenum Publishers.

- Cleal, R. M. J. (1995) Pottery fabrics in Wessex in the fourth to second millennia BC. In I. Kinnes and G. Varndell (eds.) *'Unbaked Urns of Rudely Shape'. Essays on British and Irish Pottery for Ian Longworth*, 185–94. Oxford, Oxbow Books.
- Coles, J. M. and Coles, B. J. (1989) *Prehistory of the Somerset Levels*. Hertford, Somerset Levels Project.
- Copley, M. S., Berstan, R., Mukherjee, A. J., Dudd, S. N., Straker, V., Payne, S., and Evershed, R. P. (2005) Dairying in Antiquity III. Evidence from absorbed lipid residues dating to the British Neolithic. *Journal of Archaeological Science* 32, 523–46.
- Costin, C. (2000) The use of ethnoarchaeology for the archaeological study of ceramic production. *Journal of Archaeological Method and Theory* 7, 377–403.
- Craig, O. E., Shillito, L.-M., Albarella, U., Viner-Daniels, S., Chan, B., Cleal, R., Ixer, R., Jay, M., Marshall, P., Simmons, E., Wright, E., and Parker Pearson, M. (2015) Feeding Stonehenge: cuisine and consumption at the Late Neolithic site of Durrington Walls. *Antiquity* 89, 1096–109.
- Cramp, K. and Lamdin-Whymark, H. (2005) Flint. In J. Timby, D. Stansbie, A. Norton, and K. Welsh (eds.) *Excavations along the Newbury reinforcement pipeline: Iron Age-Roman activity and a Neolithic pit group*. *Oxoniensia* LXX, 203–308.
- Cramp, L. J. E., Jones, J., Sheridan, A., Smyth, J., Whelton, H., Mulville, J., Sharples, N. and Evershed, R. P. (2014) Immediate replacement of fishing with dairying by the earliest farmers of the northeast Atlantic archipelagos. *Proceedings of the Royal Society B* 281, 1–8.
- Darvill T. (2004) Soft-rock and organic tempering in British Neolithic Pottery. In R. M. J. Cleal and J. Pollard (eds.) *Monuments and Material Culture. Papers in Honour of an Avebury Archaeologist: Isobel Smith*, 193–206. Salisbury, The Hobnob Press.
- Eriksson, G. (2004) Part-time farmers or hard-core sealers? Västerbjers studied by means of stable isotope analysis. *Journal of Anthropological Archaeology* 23, 135–62.
- Evershed, R. P. (2008) Organic residue analysis in archaeology: The archaeological biomarker revolution. *Archaeometry* 50, 895–924.
- Evershed, R. P., Stott, A. W., Raven, A., Dudd, S. N., Charters, S. and Leyden, A. (1995) Formation of long-chain ketones in ancient pottery vessels by pyrolysis of acyl lipids. *Tetrahedron Letters* 36, 8875–8.
- Fernández-Armesto, F. (2002) *Near a Thousand Tables: A History of Food*. New York, Simon and Schuster.
- Fischer, A., Olsen, J., Richards, M. P., Heinemeier, J., Sveinbjörnsdóttir, A. E., and Bennike, P. (2007) Coast-inland mobility and diet in the Danish Mesolithic and Neolithic: Evidence from stable isotope values of humans and dogs. *Journal of Archaeological Science* 10, 1–26.
- Fontanals-Coll, M., Subirà, M. E., Marín-Moratalla, N., Ruiz, J. and Gibaja, J. F. (2014) From Sado Valley to Europe: Mesolithic dietary practices through different geographic distributions. *Journal of Archaeological Science* 50, 539–50.
- Gebauer, A. B. (1995) Pottery production and the introduction of agriculture in southern Scandinavia. In W. K. Barnett and J. W. Hoopes (eds.) *The Emergence of Pottery: Technology and Innovation in Ancient Societies*, 99–112. Washington, Smithsonian Institution Press.
- Gibson, A. and Woods, A. (1997) *Prehistoric Pottery for the Archaeologist*. London/Washington, Leicester University Press.
- Goude, G. and Fontugne, M. (2016) Carbon and nitrogen isotopic variability in bone collagen during the Neolithic period: Influence of environmental factors and diet. *Journal of Archaeological Science* 70, 117–31.
- Hamilakis, Y. (1999) Food technologies/technologies of the body: The social context of wine and oil production and consumption in Bronze Age Crete. *World Archaeology* 31, 38–54.
- Hamilakis, Y. (2013) *Archaeology and the Senses. Human Experience, Memory, and Affect*. Cambridge, Cambridge University Press.
- Hommel, P. M., Day, P. M., Jordan, P. and Vetrov, V. M. (2016) Context is everything: Early pottery, hunter-gatherers and the interpretation of technological choices in Eastern Siberia. In E.

- Sibbesson, B. Jervis, and S. Coxon (eds.) *Insight from Innovation: New Light on Archaeological Ceramics*, 1–18. Southampton, Highfield Press.
- Hurcombe, L. M. (2014) *Perishable Material Culture in Prehistory: Investigating the Missing Majority*. London, Routledge.
- Isaksson, S. (2010) Food for thought. On the culture of food and the interpretation of ancient subsistence data. *Journal of Nordic Archaeological Science* 17, 3–10.
- Jones, A. M. (1999) The world on a plate: Ceramics, food technology and cosmology in Neolithic Orkney. *World Archaeology* 31, 55–77.
- Jones, A. M. (2002) *Archaeological Theory and Scientific Practice*. Cambridge, Cambridge University Press.
- Katzenberg, M. A. and Weber, A. (1999) Stable isotope ecology and palaeodiet in the Lake Baikal Region of Siberia. *Journal of Archaeological Science* 26, 651–9.
- Knight, M. (2006) Mildenhall pottery. In D. Garrow, S. Lucy, and D. Gibson *Excavations at Kilverstone, Norfolk: An Episodic Landscape History*, 29–53. Cambridge, Cambridge Archaeological Unit, East Anglian Archaeology Report No. 113.
- Lamdin-Whymark, H., Brady, K. and Smith, A. (2009) Excavation of a Neolithic to Iron Age landscape at Horcott Pit, Gloucestershire, in 2002 and 2003. *Transactions of the Bristol and Gloucestershire Archaeological Society* 127, 45–131.
- Lamdin-Whymark, H. (2010) Worked Flint. In K. Powell, A. Smith, and G. Laws *Evolution of a farming community in the Upper Thames Valley. Excavation of a prehistoric, Roman, and post-Roman landscape at Cotswold Community, Gloucestershire and Wiltshire*, 53–74. Oxford, Oxford Archaeology South.
- Lewicka, P. B. (2011) *Food and Foodways of Medieval Cairenes. Aspects of Life in an Islamic Metropolis of the Eastern Mediterranean*. Leiden, Brill.
- Lidén, K., Eriksson, G., Nordqvist, B., Götherström, A. and Bendixen, E. (2004) The wet and the wild followed by the dry and the tame – or did they occur at the same time? *Antiquity* 78, 39–48.
- Lubell, D., Jackes, M., Schwarcz, H., Knyf, M. and Meiklejohn, C. (1994) The Mesolithic-Neolithic transition in Portugal: Isotopic and dental evidence of diet. *Journal of Archaeological Science* 21, 201–16.
- Manson, J. L. (1995) Starčevo pottery and Neolithic development in the Central Balkans. In W. K. Barnett and J. W. Hoopes (eds.) *The Emergence of Pottery: Technology and Innovation in Ancient Societies*, 65–78. Washington, Smithsonian Institution Press.
- Metheny, K. B. (2015) Foodways. In K. B. Metheny and M. C. Beaudry (eds.) *Archaeology of Food. An Encyclopedia*, 221. Lanham, Rowman & Littlefield.
- Milner, N. J. (2006) Subsistence. In C. Conneller and G. Warren (eds.) *Mesolithic Britain and Ireland: New Approaches*, 61–82. Stroud, Tempus.
- Milner, N. J., Craig, O. E., Bailey, G. N., Pedersen, K. and Andersen, S. H. (2004) Something fishy in the Neolithic? An Assessment of the use of stable isotopes in the reconstruction of subsistence. *Antiquity* 78, 19–38.
- Milner, N. J., Craig, O. E., Bailey, G. N. and Andersen, S. H. (2006) A response to Richards and Schulting. *Antiquity* 80, 456–8.
- Mintz, S. W. and Du Bois, C. M. (2002) The anthropology of food and eating. *Annual Review of Anthropology* 31, 99–119.
- Morrison, K. D. (2012) Great transformations: On the archaeology of cooking. In E. Rodríguez-Alegría and S. R. Graff (eds.) *The Menial Art of Cooking: Archaeological Studies of Cooking and Food Preparation*, 231–44. Boulder, University Press of Colorado.
- Olsson, M. and Isaksson, S. (2008) Molecular and isotopic traces of cooking and consumption of fish at an Early Medieval manor site in eastern middle Sweden. *Journal of Archaeological Science* 35, 773–80.
- Pollard, A. M., Batt, C., Stern, B. and Young, S. M. M. (2007) *Analytical Chemistry in Archaeology*. Cambridge, Cambridge University Press.

- Povellini, D. (2000) *Folk Physics for Apes: Chimpanzees, Tool-use, and Causal Understanding*. Oxford, Oxford University Press.
- Raven, A. M., van Bergen, P. F., Stott, A. W., Dudd, S. N. and Evershed, R. P. (1997) Formation of long-chain ketones in archaeological pottery vessels by pyrolysis of acyl lipids. *Journal of Analytical and Applied Pyrolysis* 40–41, 267–85.
- Rees, S. (2012) Excavations at Carreg Coetan Arthur chambered tomb, Pembrokeshire. *Archaeologia Cambrensis* 161, 51–163.
- Rice, P. M. (1987) *Pottery Analysis: A Sourcebook*. London and Chicago, University of Chicago Press.
- Richards, M. P. (2003) Explaining the dietary isotope evidence for the rapid adoption of the Neolithic in Britain. In M. Parker Pearson (ed.) *Food, Culture and Identity in the Neolithic and Early Bronze Age*, 31–6. Oxford, Archaeopress British Archaeological Reports S1117.
- Richards, M. P. and Mellars, P. A. (1998) Stable isotopes and the seasonality of the Oronsay middens. *Antiquity* 72, 178–84.
- Richards, M. P. and Hedges, R. E. M. (1999) A Neolithic revolution? New evidence of diet in the British Neolithic. *Antiquity* 73, 891–7.
- Richards, M. P. and Schulting, R. J. (2006) Against the grain? A response to Milner et al. (2004). *Antiquity* 80, 444–58.
- Rodríguez-Alegría, E. and Graff, S. R. (2012) Introduction: The Menial Art of Cooking. In S. R. Graff and E. Rodríguez-Alegría (eds.) *The Menial Art of Cooking: Archaeological Studies of Cooking and Food Preparation*, 1–18. Boulder, University Press of Colorado.
- Roffet-Salque, M., Dunne, J., Altoft, D. T., Casanova, E., Cramp, L. J. E., Smyth, J., Whelton, H., and Evershed, R. P. (2017) From the inside out: Upscaling organic residue analysis of archaeological ceramics. *Journal of Archaeological Science* 16, 627–640.
- Rowley-Conwy, P. (2000) Animal bones and the reconstruction of past human societies. In P. Rowley-Conwy (ed.) *Animal Bones, Human Societies*, ix–x. Oxford, Oxbow Books.
- Rye, O. S. (1981) *Pottery Technology: Principles and Reconstruction*. Washington, Taraxacum.
- Santacreu, D. A. (2014) *Materiality, Techniques and Society in Pottery Production. The Technological Study of Archaeological Ceramics through Paste Analysis*. Warsaw/Berlin, De Gruyter Open.
- Santich, B. J. (1988) Two languages, two cultures, two cuisines: A comparative study of the culinary cultures of northern and southern France, Italy, and Catalonia in the fourteenth and fifteenth centuries. Unpublished PhD thesis, Flinders University of South Australia.
- Santich, B. J. (2007) The study of gastronomy: A catalyst for cultural understanding. *The International Journal of the Humanities* 5, 53–7.
- Sassaman, K. E. (1995) The social contradictions of traditional and innovative cooking technologies in the prehistoric American southeast. In W. K. Barnett and J. W. Hoopes (eds.) *The Emergence of Pottery: Technology and Innovation in Ancient Societies*, 223–40. Washington: Smithsonian Institution Press.
- Saul, H., Glykou, A., and Craig, O. E. (2014) Stewing on a theme of cuisine. Bimolecular and interpretive approaches to culinary changes at the transition to agriculture. In A. W. R. Whittle and P. Bickle (eds.) *Early Farmers: The View from Archaeology and Science*, 197–213. Oxford, British Academy/Oxford University Press.
- Schulting, R. J. and Richards, M. P. (2002a) Finding the coastal Mesolithic in southwest Britain: AMS dates and stable isotope results on human remains from Caldey Island, south Wales. *Antiquity* 76, 1011–25.
- Schulting, R. J. and Richards, M. P. (2002b) The wet, the wild and the domesticated: The Mesolithic–Neolithic transition on the west coast of Scotland. *Journal of European Archaeology* 5, 147–89.
- Sibbesson, E. (2012) Social fabrics: People and pottery at Early Neolithic Kilverstone, Norfolk. In H. Anderson-Whymark and J. Thomas (eds.) *Regional Perspectives on Neolithic Pit Deposition: Beyond the Mundane*, 112–25. Oxford, Oxbow Books.

- Sibbesson, E. (2014) Transformations in cookery and clay: The first thousand years of pottery in prehistoric Oxfordshire. In M. McWilliams (ed.) *Food & Material Culture. Proceedings of the 2013 Oxford Symposium on Food & Cookery*, 281–88. Totnes, Prospect Books.
- Sibbesson, E. and Isaksson, S. (forthcoming) From content to context: Ceramic lipid residue study of cooking and potting practices of the fourth millennium cal. BC in the Upper Thames Valley, UK
- Skandfer, M. (2010) ‘All Change’? Exploring the role of technological choice in the early northern comb ware of Finnmark, Arctic Norway. In P. Jordan and M. Zvelebil (eds.) *Ceramics before Farming. The Dispersal of Pottery Among Prehistoric Eurasian Hunter-Gatherers*, 347–94. Walnut Creek, Left Coast Press.
- Smith, M. and Brickley, M. (2009) *People of the Long Barrows. Life, Death and Burial in the Earlier Neolithic*. Stroud, The History Press.
- Thomas, J. (1988) Neolithic explanations revisited: The Mesolithic-Neolithic transition in Britain and south Scandinavia. *Proceedings of the Prehistoric Society* 54, 59–66.
- Thomas, J. (2003) Thoughts on the ‘Repacked’ Neolithic revolution. *Antiquity* 77, 67–74.
- Whittle, A. W. R. (2003) *The Archaeology of People: Dimension of Neolithic Life*. London, Routledge.
- Wilson, B. (2013) *Consider the Fork: A History of how we Cook and Eat*. London, Penguin.
- Wood, R. C. (1996) *The Sociology of the Meal*. Edinburgh, Edinburgh University Press.

Articulating the disarticulated: Human remains from the Early Neolithic of the eastern Fertile Crescent (eastern Iraq and western Iran)

Sam Walsh and Roger Matthews

THE NEOLITHIC TRANSITION IN THE EASTERN FERTILE CRESCENT

In the eastern Fertile Crescent region of the Middle East, the Early Neolithic period, c.9800–7000 cal BC, is critical in hosting one of the earliest transitions from hunter-forager to sedentary farmer and animal herder, the so-called Neolithic transition (Mithen 2003; Barker 2006). During this period, in the context of a steadily ameliorating climate in the aftermath of the Younger Dryas cold spell, small groups of humans across the hilly flanks and high plains of the Zagros chain of mountains of western Iran and eastern Iraq developed their food-procuring strategies to include new modes of intensified plant cultivation (Riehl *et al.* 2013) as well as herding and penning of previously wild animals (Zeder 1999), leading in due course to domestication of a range of plant and animal species.

By 7500 cal BC human communities of the region had domesticated goat and sheep and were on the way to becoming settled farmers living in villages consisting of houses constructed of mud-brick and pisé. Plausible social implications of the increased permanence and density of settlement in the Early Neolithic include a heightened sense of attachment to place, and a concern to address issues of tension between the development of personal, familial and social identities. Treatment of the human dead was a key arena for the acting out of this discourse, as is vividly attested in the archaeological record across the Middle East by elaboration of rituals and practices connected with death and burial (Croucher 2012).

One key region of pristine change within the Early Neolithic transition is the central Zagros mountains of western Iran and eastern Iraq (Fig. 5.1). This region is the focus of a major programme of excavations and analyses, the Central Zagros Archaeological Project (CZAP) co-directed by Roger Matthews and Wendy Matthews of the University of Reading (Matthews & Fazeli Nashli 2013; Matthews *et al.* 2013). Four Early Neolithic sites are under investigation through application of an integrated programme of excavation and laboratory analysis: Sheikh-e Abad and Jani in Iran and Bestansur and Shimshara in Iraq, whose combined occupation spans c.9800 to 7500 cal BC, or the entirety of the Pre-Pottery (or Aceramic) Neolithic of the region.

A critical component of this dramatic episode of change relates to the disposal and treatment of the human dead. In this article, we examine the evidence for human burial and disposal of the dead at two of the CZAP sites before situating the results within the context

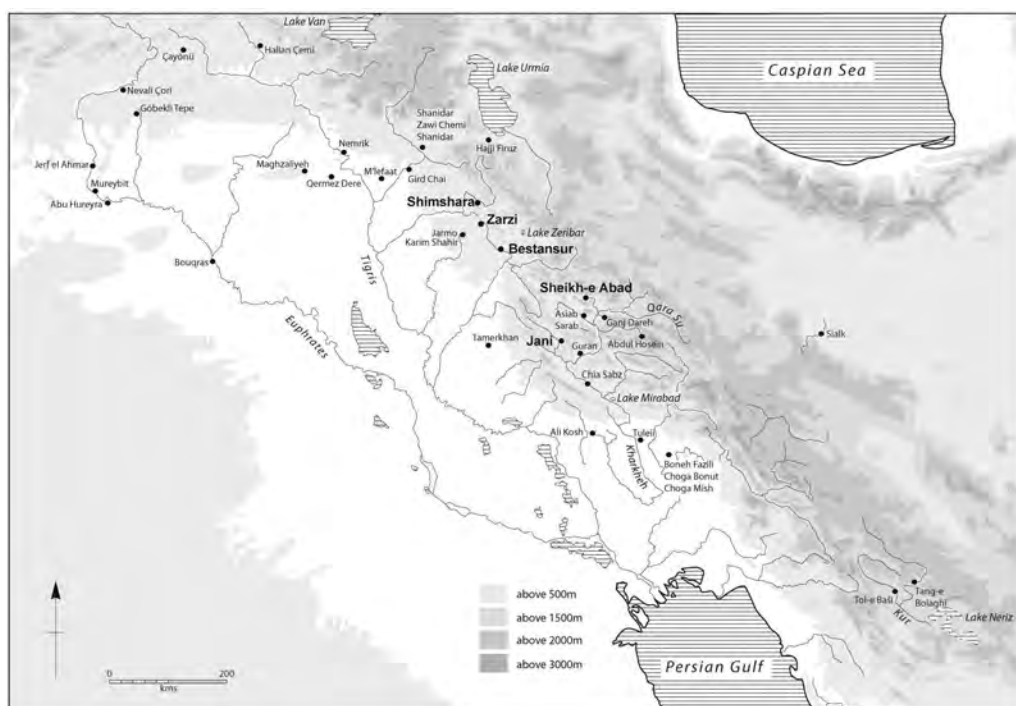


Fig 5.1: Map to show location of key sites.

of Early Neolithic burial practices across the eastern Fertile Crescent. In approaching these mortuary assemblages, we follow Liv Nilsson Stutz (2014) in seeing the lifeless human body and its post mortem treatment as vehicles for the negotiation of codes of social interaction and behaviour: ‘The handling of the human cadaver constitutes a recurrent and universal theme in mortuary practices. Through the treatment of the human cadaver the survivors control death with the aim of producing a death that is socially acceptable and holds a place within the general cosmology.’ (Nilsson Stutz 2014, 719).

THE DEAD OF SHEIKH-E ABAD, IRAN

With the onset of the Neolithic across the Middle East we see a significant increase in the quantity and diversity of human burials at multiple sites (Croucher 2012). From the CZAP sites, six human burials were excavated at the Early Neolithic site of Sheikh-e Abad in western Iran, all six dating to c.7600 cal BC (Cole 2013) (Fig. 5.2). These burials were laid individually in pits probably through the floors of architectural levels since eroded off the top of the mound. At least four of the burials were adult males: most had signs of dental disease and two had dental anomalies (Cole 2013, tables 14.2–14.4). Overall, tooth-wear patterns of these individuals appear more in keeping with a hunter-gatherer lifestyle rather than that of an agriculturalist. The Sheikh-e Abad burials are mainly flexed inhumations, variously oriented. The exception, Burial 707, is in a partially supine position with legs in

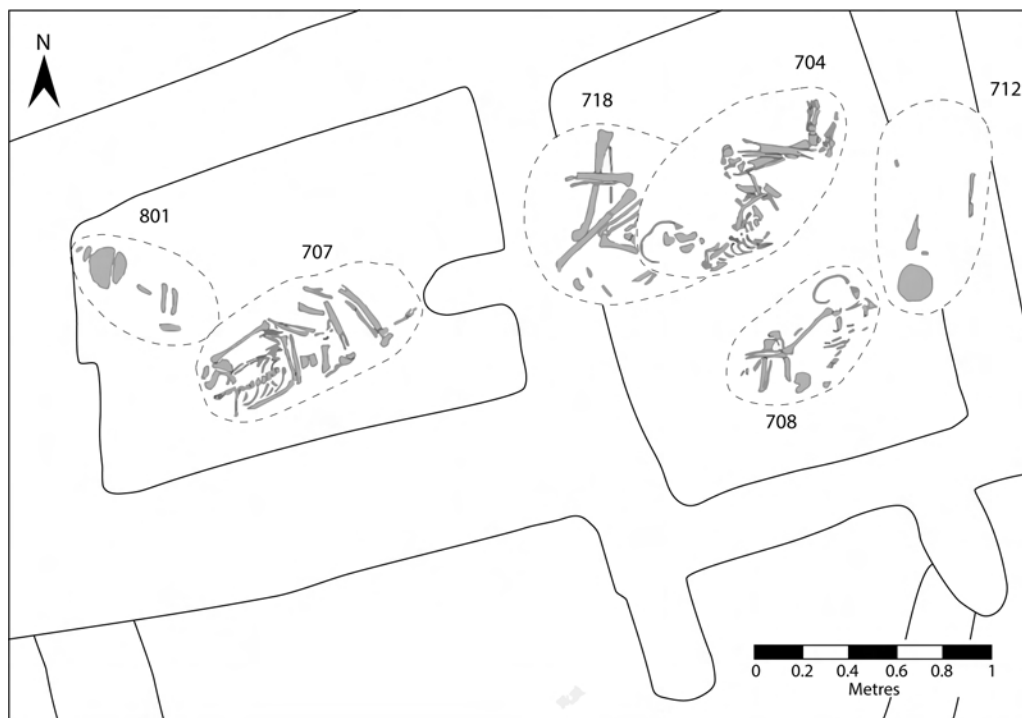


Fig. 5.2: Neolithic human burials from Sheikh-e Abad, Iran.

flexion. This individual is also lacking a head which is possibly a case of deliberate skull removal prior to burial. One infant burial had been placed under the floor in the corner of a small room. Two of the burials have traces of red ochre, and traces of black organic matter, perhaps matting, were found under one skeleton.

THE DEAD OF BESTANSUR, IRAQ

Ongoing excavations at the Early Neolithic site of Bestansur in Iraqi Kurdistan have recovered evidence for human disposal at several points around the settlement. In Trench 7 a double burial includes one older adult male and an adolescent female buried together (Fig. 5.3). The body of the male individual buried in a highly flexed position may have been tightly bound prior to burial, perhaps because of death occurring at some distance from the site and the body being protected during transport to Bestansur. Other scattered human remains have been found in external activity areas around the settlement at Bestansur.

The major discovery of human remains at Bestansur comes from Space 50 in Building 5, Trench 10, radiocarbon dated to ≈ 7700 cal BC. Building 5 is a large rectilinear structure composed of plastered pisé, with Space 50 its largest room, covering an area of $\approx 8 \times 4.5$ m (Figs. 5.4 & 5.5). Below the floors of this room there are multiple human burials in various states of articulation and orientation. At least 65 individuals are represented by these

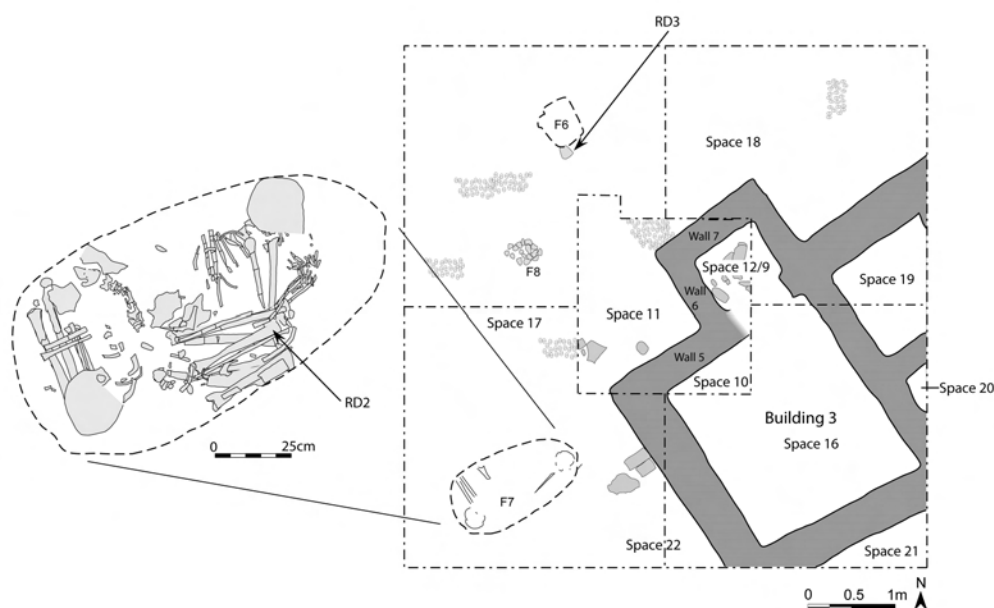


Fig. 5.3: Double human burial from Trench 7, Bestansur, Iraq.

remains. Much of Space 50 has not yet been excavated and we expect to excavate many more individuals in future seasons. Of the individuals excavated so far, 49 are juveniles between the ages of perinatal infant to adolescence, and the majority of these are infants and young children. As well as the main skeletal assemblage, areas of scattered bones comprise small elements such as bones of the hands and feet, as well as single teeth, bone ends and partial vertebrae.

So far, evidence for palaeopathology within the assemblage is limited to physiological stress and/or malnutrition indicated by dental enamel defects (including linear enamel hypoplasia), bone porosity, and extra bone formation. There is also a small amount of joint degeneration indicating possible arthritic changes in some adult bones. The adult remains seem to have been predominantly located towards the central and western ends of Space 50, much of which is still to be excavated. Many of the juveniles so far excavated were placed within view of the threshold at the southern end of this room. Finds associated with the Building 5 human remains include multiple beads of clay, shell and carnelian, as well as four cowrie shells that may once have been inserted into the eye sockets of skulls (Figs. 5.6 & 5.7). Such objects were associated with both adults and juveniles. There are also deliberate spreads of red pigment on selected bones (Fig. 5.8).

There are multiple episodes of human burial in Space 50, partly attested by cuts through the room floors, which together demonstrate the variability of burial practices in the Early Neolithic. Both articulated and disarticulated adults and juveniles were deposited in multiple individual and collective deposits into sub-floor packing. A significant example is that of a female adult which was at least partially disarticulated and deposited in a deliberate



Fig. 5.4: Plan of Building 5, Trench 10, Bestansur, Iraq.

manner. As part of this deposit a humerus and ulna were placed as if articulated but with the appropriate joints at the opposite ends. The majority of individuals in the sub-floor phase are juveniles aged from birth to eight years of age, two of which were together in a double burial, while the others had been layered over each other.

After this phase, there is a spread of scattered and disarticulated small skeletal elements, predominantly teeth, and bones of the extremities on surfaces and in fill above the floors. These remains are those typically left behind after the complete defleshing and removal of



Fig. 5.5: Excavation of human remains in Space 50, Building 5, Trench 10, Bestansur, Iraq.

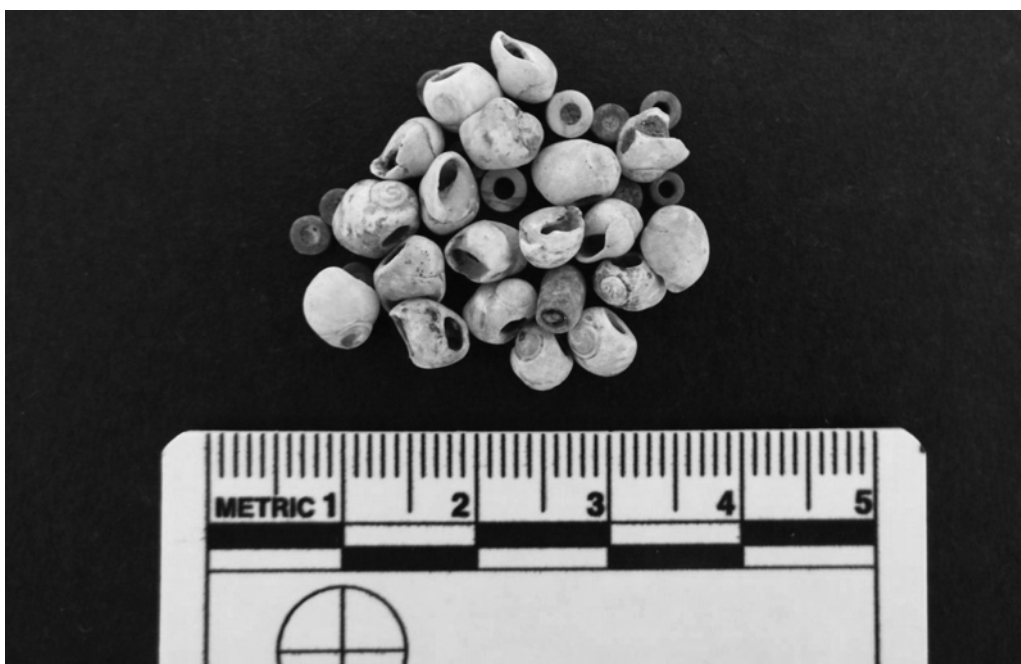


Fig. 5.6: Beads from human remains deposits in Space 50, Building 5, Trench 10, Bestansur, Iraq.



Fig. 5.7: Cowrie shells adjacent to human skull, Space 50, Building 5, Trench 10, Bestansur, Iraq.

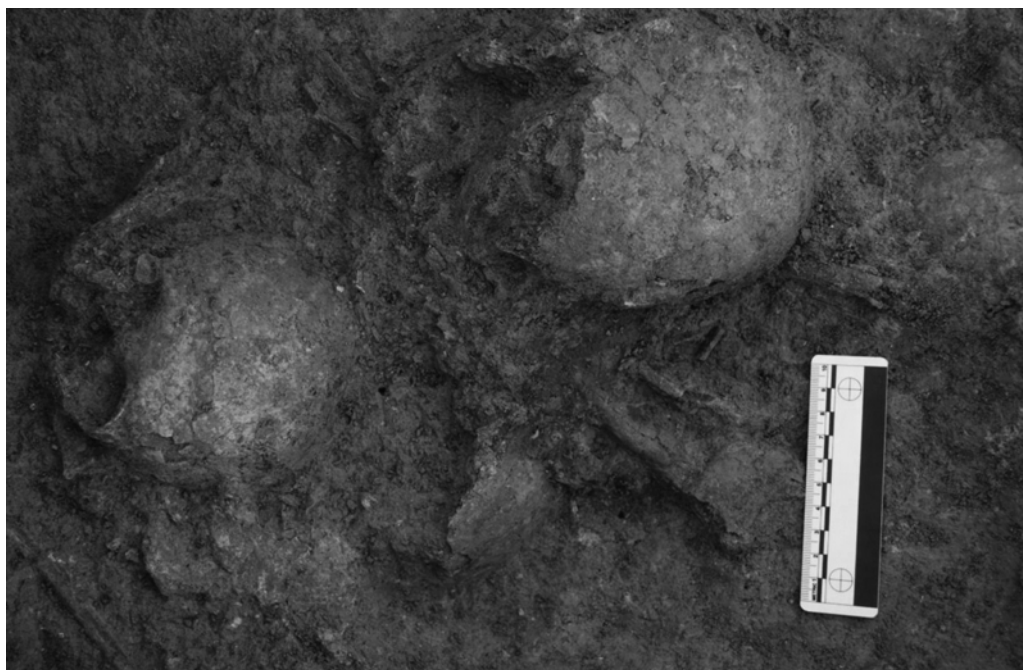


Fig. 5.8: Spread of red pigment on human bones in discrete deposit, Space 50, Building 5, Trench 10, Bestansur, Iraq.

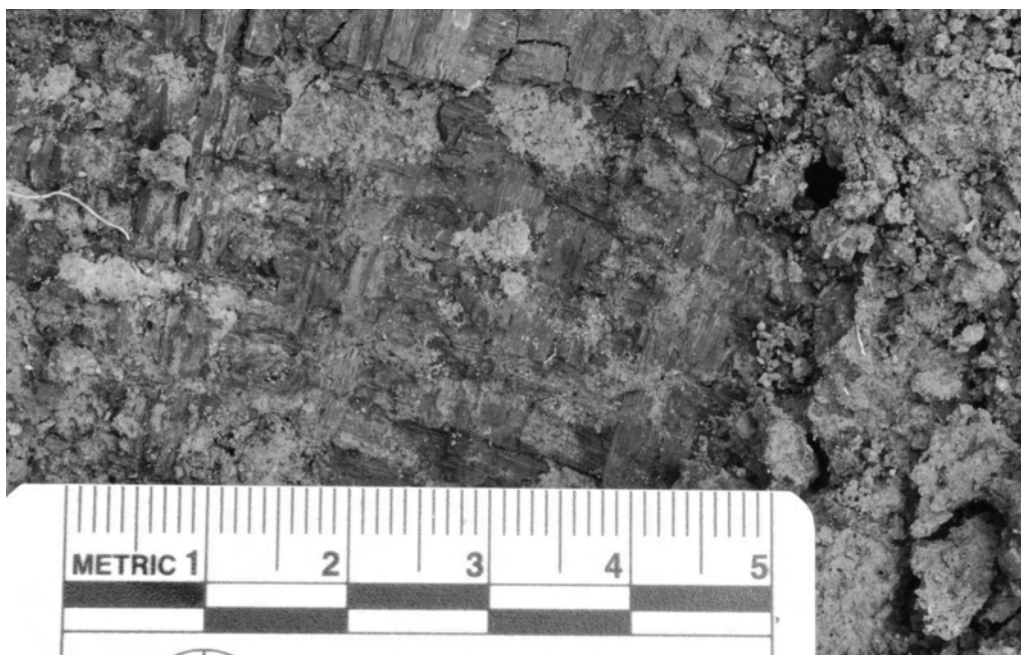


Fig. 5.9: Traces of matting or basketry on floor of Space 50, Building 5, Trench 10, Bestansur, Iraq.

the larger skeletal elements (Galloway *et al.* 1997; Bello & Andrews 2006). Also associated with this phase was a cranial fragment found on traces of matting or basketry (Fig. 5.9), which could indicate potential storage or tidying of smaller fragments. Lastly, an adult flexed burial relates to the upper fill and closure of Building 5.

The plan of Building 5 is distinctive (Fig. 5.4), with a long rectangular ante-room with portico entrance, in which a large stone with multiple cut-marks was placed. A small sub-rectangular room, Space 48, contained deeply stratified ash with small amounts of unburnt human bone (one hand bone, and two teeth, all adult). It may be that the repeated and highly contained burning attested by the thick ash deposits in Space 48 relates to the cleansing of ritual paraphernalia involved in the burial practices, such as mats and baskets, through their deliberate and regular destruction by fire.

Underlying Building 5 we have clear traces of an elaborate mud-brick building, with lavishly plastered and painted walls, Building 8, which we have yet to excavate (Fig. 5.4). We anticipate that this building may be an earlier version of Building 5 and may also have served as special place for treatment and burial of human remains.

THE WIDER CONTEXT: DEATH AND BURIAL IN THE EARLY NEOLITHIC OF THE EASTERN FERTILE CRESCENT

The human burials from Bestansur can be situated more richly by reviewing the contemporary evidence from other sites in the eastern Fertile Crescent. Burials of disarticulated human remains are common at Early Neolithic sites of the eastern Fertile Crescent, while in the Later Neolithic, from c.7000 cal BC, the trend is towards fully

articulated burial of the dead under house floors. This practice of ‘domesticating the dead’ by bringing them fully into the home as articulated individuals buried under the floors of living rooms, reaches its apogee at Later Neolithic sites such as Çatalhöyük in central Anatolia (Larsen *et al.* 2015). We here briefly review some of the burial practices attested at key contemporary sites of the eastern Fertile Crescent.

Located approximately midway between Sheikh-e Abad and Jani, and at 1330m above sea level, the flat site of Asiab comprises extensive midden-like deposits over an area of some 2ha, the major excavated feature being a large pit, 8–10m in diameter, which may have served as a semi-subterranean living structure (Howe 1983, 115–7). The pit was filled with layers of ash and sequences of hearths, and within the pit fill there were two human burials, one sprinkled with red pigment. Large quantities of apparently human coprolites suggest that at least part of the large pit was used as a latrine at some stage. Recent radiocarbon dates for Asiab suggest occupation of the site at c.8700 cal BC (Zeder 2006, 193–4), thus contemporary with some of the sequence at Sheikh-e Abad and probably with lower levels of Jani too.

Our understanding of the central Zagros Early Neolithic is enhanced by the site of Ganj Dareh (Smith 1990), part of a cluster of small Neolithic sites in the region. At Ganj Dareh issues of goat exploitation and early steps towards domestication have been to the fore. Ganj Dareh was occupied for a couple of centuries around 7950–7750 cal BC (Zeder 2006, 193–4), contemporary with Jani and upper levels at Sheikh-e Abad. Chemical analysis of human skeletons indicates a strong focus on a meat diet rather than consumption of plant resources (Schoeninger 1981). Human burials occur in large numbers at Ganj Dareh, generally inserted under house floors in levels D–A, and there is extensive evidence for deliberate skull shaping on both male and female skulls (Lambert 1979; Meiklejohn *et al.* 1992) and for secondary reburial. Child burials were set into wall niches.

Also in the high central Zagros, at 1860m above sea level, the site of Abdul Hosein was excavated in 1978 (Pullar 1990). Radiocarbon dates indicate occupation in the mid-late eighth millennium BC, overlapping with that at Ganj Dareh, Sheikh-e Abad and Bestansur. Early Neolithic human burials at Abdul Hosein are intriguing in their nature and positioning. One adult female was buried with a foetus under a plastered floor and a large stone bowl placed beside her head, while in the same building a crouched human burial was crammed into an erstwhile doorway and plastered over (Pullar 1990, 10, pls. 3–4). Another adult appears to have been buried in a slumped squatting position along with the scapula of a cow (Pullar 1990, 10, pl. 14 top), and a group of four individuals, two adults and two infants, were either killed and buried by roof collapse (Pullar 1990, 10, pl. 12), or may have been inserted into the fill of an abandoned building. In any case, the intricate association of human burials with architectural spaces is a dominant feature of the Early Neolithic of the Zagros and likely indicates a developing concern over ownership of space and increasing attachment to architectural place. As at Ganj Dareh, a significant proportion of the Abdul Hosein adult skulls, male and female, show evidence for deliberate head shaping.

Excavations at the site of Tepe Guran in the Hulailan valley of Luristan add to the picture of a marked transition from seasonal to year-round occupation by human communities at specific locales across the landscapes of the central Zagros (Mortensen 2014). The mound is at 950m above sea level and its lowermost levels, V–T, are of late Early Neolithic date, c.7400–7000 cal BC (Zeder 2006, 195). A discrete deposition of human bones, including four

skulls and limb bones, in a pit in the early levels at Guran suggests a form of curation of human remains prior to final burial (Mortensen 2014, 17–9). The clustering and deliberate arrangement of partly articulated and disarticulated bones from multiple individuals, as well as the mixture of adult and infant remains, makes a good comparison with the Space 50 evidence at Bestansur.

The deposition of the Guran remains in a pit dug into virgin soil, filled with layers of ash, suggests that these complex mortuary practices held significance within an increasing sense of attachment to place that is characteristic of many Early Neolithic sites of the Zagros region, before the appearance of evidence for significant architectural investment. The mortuary practices attested at Bestansur can perhaps best be viewed as a continuation and a development of these Early Neolithic intensifications of engagement with space, place and landscape on the cusp of the transition from mobile to sedentary. In contrast to the secondary burials in the Early Neolithic levels at Guran, later phases are characterised by more substantial, densely packed mud-brick houses with red ochre decoration on the walls and human burials under the floors.

The most fully excavated, analysed and published Neolithic site of north-western Iran is Hajji Firuz Tepe (Voigt 1983), situated at 1300m above sea level on the fertile Ushnu-Solduz valley to the south of Lake Urmia. The Neolithic architecture at Hajji Firuz consists of neat rectilinear mud-brick buildings plastered with lime and with traces of red and black paint. Internal features include ovens and plaster storage bins. There are many human burials below floors, as well as so-called ‘ossuary burials’ comprising both primary and secondary interments with red pigment.

HOUSES OF THE DEAD

The human remains from Bestansur can be further situated by reviewing the contemporary evidence from sites with so-called Houses of the Dead, in particular Çayönü in south-eastern Turkey and Abu Hureyra and Džade al-Mughara in Syria. The famous Skull Building at Çayönü appears to have been in use for up to 1000 years from c.8500 cal BC (Özdoğan 1999). The Skull Building was rebuilt through multiple phases before being destroyed by fire at the end of its life. In total, at least 450 individuals are represented by the human remains from this building, principally as skulls and long bones, often in association with skulls and bones of wild cattle, and occasionally with burial goods such as beads. The curation and deposition of human remains within the Skull Building is tightly choreographed through space and time, with set stages in the sequential treatment of cadavers, skulls, skeletons and single bones. The age and sex distribution of the Skull Building dead appears to be inclusive of all categories, except for infants below two years old, in contrast to the pattern seen at Bestansur Building 5.

A further connection between Çayönü and Bestansur and other sites of the Iraqi Zagros region is the occurrence of numbers of retouched obsidian blades of the type known as Çayönü tools, which appear from about 8000 cal BC, as well as the adoption of pressure blade lithic technology in eastern Mesopotamia and Anatolia at about the same time (Kozłowski 1999). The widespread occurrence of Çayönü tools across the eastern Fertile Crescent and their association with polished alabaster bowls and bracelets vividly attests the

inter-connectedness of Early Neolithic communities across the Taurus-Zagros zone, as also evidenced by commonalities in the traditions and practices of disposal of the human dead.

Further west, at the site of Abu Hureyra on the Syrian Euphrates, the Phase 8 building in Trench B, dating to ≈ 9000 cal BC, is a most informative parallel for Bestansur Building 5 (Moore & Molleson 2000). Room 3 of the Abu Hureyra building has the remains of at least 24 individuals laid on its successive floors through a lengthy period of use. It appears to have functioned as a room where bodies were placed in order to decay, to enable the separation of skulls and other elements for deposition elsewhere. At least one skull had been wrapped in matting before being laid on the floor, similar to at Bestansur where a skull fragment was found on the remains of matting. Destruction of the Abu Hureyra building by fire meant that the bodies on the floor of Room 3 were never removed from what was likely intended as a temporary resting place before progress to the next step of structured deposition, probably as formal burials under house floors. It is not yet clear whether bodies were being laid out on the floors of Space 50 at Bestansur, but a few scattered bones apparently lying on the floors suggest this possibility. If so, this would be a practice very similar to that attested at Abu Hureyra. At Abu Hureyra it is understood that the 30 individuals buried in pit 144 (Room 2) constitute remains from bodies which had been removed from Room 3 for burial in pit 144. Some of these pit remains were associated with beads of clay, turquoise and bone points, in contrast to the remains left in Room 3 which had no associated artefacts, in keeping with the transitory state of their presence on the floor of Room 3.

The Abu Hureyra building is an intriguing parallel with which to aid interpretation of Building 5 at Bestansur, where similar practices may have been pursued, namely the laying out of cadavers on the floor to allow decay of fleshy elements, followed in time by the removal of large parts of the disarticulated remains for disposal or burial elsewhere. It is also likely that body parts were being carried across the landscape in seasonal movements of groups of people attached in some way to the settlement at Bestansur prior to their eventual disposal under the floors of Space 50.

The House of the Dead at Dj'ade al-Mughara, on the Syrian Euphrates and dated to ≈ 8000 BC (Coqueugniot 2000), also provides stimulating evidence with which to consider the Bestansur material. The Dj'ade House of the Dead consists of four small rectilinear rooms within which the remains of at least 38 individuals were found, mainly of infants and young adults. There are primary intact burials, groups of skulls and collections of disarticulated bones, much like the Bestansur Space 50 assemblage. The excavator suggests that primary burials may represent individuals who died at the site of Dj'ade, while secondary burials relate to deaths away from Dj'ade during episodes of seasonal movement.

CONCLUSIONS

The emphasis on staged disarticulation of human remains and their sequential association with the tight stratigraphy of Building 5 at Bestansur enables us to reconstruct micro-histories of engagement between the living and the dead during an episode of fundamental change in the human condition, at the very origins of sedentarisation. This highly

significant assemblage of human remains is still under excavation. The evidence from Bestansur and other approximately contemporary sites suggests that the transition from life to death in the Early Neolithic of the Middle East was a complex, enduring and highly charged process involving several stages of metamorphosis from complete cadaver to flesh-less and often incomplete, occasionally highly scattered, skeletal remains. Special buildings were constructed to serve as theatres of death, disintegration and disposal of the dead. The deconstruction and dispersal of the dead was managed; active participation with the decomposing remains may have been a part of the grieving process, prolonging the relationship with the deceased (Tarlow 2002, 91). Aspects of decomposition drastically change the appearance of the body through taphonomic processes such as *rigor mortis*, bloating, and collapse of the fleshy parts of the corpse prior to skeletonisation (Clark *et al.* 1997, 151; Gill-King 1997, 99; Duda 2006, 35). The placement of the bodies in Space 50 means that they were relatively enclosed from view, but the thresholds to the room would have enabled some viewing of the remains from outside areas. By contrast, at Sheikh-e Abad the dead, buried under floors, were in close proximity to the living; inhabiting space in a deliberate way to keep death foregrounded for the living (Nilsson Stutz 2014, 721).

The existence and location of such buildings as Bestanur Building 5 and other Houses of the Dead may in themselves have been significant in attracting human communities to spend periods of time at specific locales in the landscape, recurrently engaging in the dramas of death and decay unfolding in and around these buildings. Such factors may have been every bit as important as issues of ecological opportunity in entangling human societies in long-term sedentism as a vital component of the Neolithic transition. The distinctive practices associated with death and disposal at Bestansur take their place amongst a wealth of elaborate funerary procedures, as human communities confronted tensions between personal and social identity, as well as intensified their claims to physical, social and cultural space through the centuries of the Early Neolithic across the Fertile Crescent.

ACKNOWLEDGEMENTS

We are very grateful to our funding bodies, the Arts and Humanities Research Council, the British Academy, the British Institute of Persian Studies, the Gerald Averay Wainwright Fund, the British Institute for the Study of Iraq and the US National Geographic Society. We also thank our collaborators: in the UK, Dr Wendy Matthews of the University of Reading; in Iraq, Kamal Rasheed Raheem and Kamal Rauf Aziz of Sulaimaniyah Antiquities Directorate; in Iran, Dr Yaghoub Mohammadifar of Bu Ali Sina University, Hamedan, and the Iranian Centre for Archaeological Research.

REFERENCES

- Barker, G. (2006) *The Agricultural Revolution in Prehistory. Why Did Foragers Become Farmers?* Oxford, Oxford University Press.

- Bello, S. and Andrews, P. (2006) The intrinsic pattern of preservation of human skeletons and its influence in the interpretation of funerary behaviours. In R. Gowland and C. Knüsel (eds.) *Social Archaeology of Funerary Remains*, 1–13. Oxford, Oxbow Books.
- Clark, M. A., Worrell, M. B. and Pless, J. E. (1997) Postmortem changes in soft tissues. In M. H. Sorg and W. D. Haglund (eds.) *Forensic Taphonomy: The Postmortem Fate of Human Remains*, 151–64. Florida, CRC Press.
- Cole, G. (2013) Human burials. In R. Matthews, W. Matthews and Y. Mohammadifar (eds.) *The Earliest Neolithic of Iran. 2008 Excavations at Sheikh-e Abad and Jani*, 163–74. Oxford, British Institute of Persian Studies.
- Coqueugniot, E. (2000) Dja'de (Syrie), un village à la veille de la domestication (seconde moitié du IX^e millénaire av. J. C. In J. Guilaine (ed.) *Premiers paysans du monde, naissances des agricultures*, 63–79. Paris, Errance.
- Croucher, K. (2012) *Death and Dying in the Neolithic Near East*. Oxford, Oxford University Press.
- Duday, H. (2006) L'archéothanatologie ou l'archéologie de la mort. In R. Gowland and C. Knüsel (eds.) *Social Archaeology of Funerary Remains*, 30–56. Oxford, Oxbow Books.
- Galloway, A., Willey, P. and Snyder, L. (1997) Human bone mineral densities and survival of bone elements: a contemporary sample. In M. H. Sorg and W. D. Haglund (eds.), *Forensic Taphonomy: The Post-Mortem Fate of Human Remains*, 295–317. Florida, CRC press.
- Gill-King, H. (1997) Chemical and ultrastructural aspects of decomposition. In M. H. Sorg and W. D. Haglund (eds.) *Forensic Taphonomy: The Postmortem Fate of Human Remains*, 93–108. Florida, CRC Press.
- Howe, B. (1983) Karim Shahir. In L. S. Braidwood, R. J. Braidwood, B. Howe, C. A. Reed and P. J. Watson (eds.) *Prehistoric Archaeology Along the Zagros Flanks*, 23–154. Chicago, University of Chicago Oriental Institute.
- Kozłowski, S. K. (1999) *The Eastern Wing of the Fertile Crescent: Late Prehistory of Greater Mesopotamian Lithic Industries*. Oxford, British Archaeological Reports International Series 760.
- Lambert, P. J. (1979) Early Neolithic cranial deformation at Ganj Dareh Tepe, Iran. *Canadian Review of Physical Anthropology* 1, 51–4.
- Larsen, C. S., Hillson, S. W., Boz, B., Pilloud, M. A., Sadvari, J. W., Agarwal, S. C., Glencross, B., Beauchesne, P., Pearson, J., Ruff, C. B., Garofalo, E. M., Hager, L. D., Haddow, S. D and Knüsel, C. J. (2015) Bioarchaeology of Neolithic Çatalhöyük: Lives and lifestyles of an early farming society in transition. *Journal of World Prehistory* 28, 27–68.
- Matthews, R. and Fazeli Nashli, H. (eds.) (2013) *The Neolithisation of Iran. The Formation of New Societies*. Oxford, British Association for Near Eastern Archaeology.
- Matthews, R., Matthews, W. and Mohammadifar, Y. (eds.) (2013) *The Earliest Neolithic of Iran. 2008 Excavations at Sheikh-e Abad and Jani*. Oxford, British Institute of Persian Studies.
- Meiklejohn, C., Agelarakis, A., Akkermans, P. A., Smith, P. E. L. and Solecki, R. (1992) Artificial cranial deformation in the proto-Neolithic and Neolithic Near East and its possible origin: evidence from four sites. *Paléorient* 18, 83–97.
- Mithen, S. (2003) *After the Ice. A Global Human History 20,000–5,000 BC*. London, Weidenfeld and Nicolson.
- Moore, A. M. T. and Molleson, T. I. (2000) Disposal of the dead. In A. M. T. Moore, G. C. Hillman and A. J. Legge (eds.) *Village on the Euphrates. From Foraging to Farming at Abu Hureyra*, 277–99. Oxford, Oxford University Press.
- Mortensen, P. (2014) *Excavations at Tepe Guran: The Neolithic Period*. Leuven, Peeters.
- Nilsson Stutz, L. (2014) Mortuary practices. In V. Cummings, P. Jordan and M. Zvelebil (eds.) *The Oxford Handbook of the Archaeology and Anthropology of Hunter-Gatherers*, 712–28. Oxford, Oxford University Press.

- Özdoğan, A. (1999) Çayönü. In M. Özdoğan and N. Başgelen (eds.) *Neolithic in Turkey. The Cradle of Civilization*, 35–63. Istanbul, Arkeoloji ve Sanat.
- Pullar, J. (1990) *Tepe Abdul Hosein: A Neolithic Site in Western Iran Excavations 1978*. Oxford, British Archaeological Report International Series 563.
- Riehl, S., Zeidi, M. and Conard, N. J. (2013) Emergence of agriculture in the foothills of the Zagros mountains of Iran. *Science* 341/6141, 65–7.
- Schoeninger, M. J. (1981) The agricultural “revolution” and its effects on human diet in prehistoric Iran and Israel. *Paléorient* 7, 73–91.
- Smith, P. E. L. (1990) Architectural innovation and experimentation at Ganj Dareh, Iran. *World Archaeology* 21, 323–35.
- Tarlow, S. (2002) The aesthetic corpse in 19th century Britain. In Y. Hamilakis, M. Pluciennik and S. Tarlow (eds.) *Thinking Through the Body*, 85–97. London, Kluwer Academic/Plenum Publishers.
- Voigt, M. M. (1983) *Haji Firuz Tepe, Iran: The Neolithic Settlement*. Philadelphia, University Museum, University of Pennsylvania.
- Zeder, M. A. (1999) Animal domestication in the Zagros: A review of past and current research. *Paléorient* 25, 11–25.
- Zeder, M. A. (2006) A critical assessment of markers of initial domestication in goats (*Capra hircus*). In M. A. Zeder, D. Bradley, E. Emschwiller and B. Smith (eds.) *Documenting Domestication: New Genetic and Archaeological Paradigms*, 181–206. Berkeley, University of California Press.

Warm air and glowing pyres: Cremating bodies in the Late Neolithic of mainland Scotland

Kenneth Brophy, Gavin MacGregor and Gordon Noble

*‘Who were these people?’
(Gibson 2016)*

INTRODUCTION

Cremation is a process that has a dramatic and transformative effect on the body, and not just the body of the deceased. Neolithic cremation would have been a transformative process for *everyone* involved and it is easy for this to be overlooked in the detailed study of the technical aspects of cremation as a process, or the wider social significance of the emergence of this new funerary practice. In order to move from processes to participants, in this paper we will draw on evidence from recent fieldwork in Scotland, both excavation and experimental work that has helped to shed light on various aspects of prehistoric cremation. We will focus on the impact on the bodies of those participating in cremation, both the dead and the living, from the corpse of the deceased to participants in the process to spectators. Downes (1999, 19) has called cremation a ‘spectacle and a journey’, and it is in this spirit which we wish to consider Late Neolithic cremation in Scotland.

Although cremation has for some time been regarded as a significant component of Irish Neolithic mortuary practice (*e.g.* Malone 2001, 138–40; Cooney 2014; 2016; Willis *et al.* 2016, 353), this process has only recently been recognised as a noteworthy element of Late Neolithic funerary rites in Britain (for reviews of current evidence, see Parker Pearson *et al.*, 2009; Noble & Brophy 2015, 2017). In fact, cremation only emerged towards the end of the fourth millennium cal BC (Parker Pearson 2012), at around the same time as several other innovations associated with new flat-bottomed pottery styles, and thus cremation is increasingly considered as part of the so-called Grooved Ware complex (*cf.* Sheridan 2004; Bradley 2007, 94ff; Thomas 2010). In this context, cremation has been viewed as one element of an innovative ideological package of new practices, monuments and material culture suggesting cremation was not just physically transformative, but was actively embedded within processes of social transformation. The relative rarity of cremation, and an association with major monuments and monument complexes across mainland Britain, including Stonehenge, Dorchester-on-Thames, Llandygái (English: Llandegai), Duggleby

Howe, Forteviot and Balfarg-Balbirnie, has also led to suggestions that those being cremated were representatives of an emergent elite of important families (Parker Pearson *et al.* 2009; Noble & Brophy 2017) or perhaps represented a new class of religious specialists (Parker Pearson 2012). Two of us (Noble & Brophy 2017) have also argued that the practice of cremation and the development of cremation cemeteries may have been crucial activities in the establishment of major monumental centres of the third millennium cal BC, adding to the potency and wider social implications of this novel mortuary rite, and the necessity for *remembering* the resting places of cremated remains and perhaps also the individuals treated in this way in death.

Such grand narratives are significant, but here we would like to narrow the focus a little and think about a different set of questions related to what cremation does to the bodies of those on and around the pyre, and what this might have meant to people in the Late Neolithic. The destruction of the body in a raging conflagration, reducing bone to fragments and dust, would presumably have been an awesome and memorable innovation when first encountered. It has recently been argued that inhumation and cremation practices were not perhaps as different from one another as they have traditionally been regarded within Neolithic studies (*cf.* Williams 2004; Cooney 2016; Gibson 2016) and thus cremation was neither wholly unfamiliar nor entirely new in some respects. Lengthy rulebound mortuary rites, the breakdown and disarticulation of the human body in a public location, and the fragmentation and manipulation of human remains are to an extent common to both inhumation and cremation. Yet there must have been distinctive elements of cremation that made it compatible with emergent ideologies at the end of the fourth millennium: for instance, access to human remains of ancestors would have been mediated differently from what had come before (Sørensen & Bille 2008), while cremation may well have been associated with new views of what happened to an individual after death and the role the body played in any afterlife. We would further argue that there are clear and distinctive differences between Early Neolithic mortuary rites and Late Neolithic cremations, the pyre itself and the dramatic visceral extremes of cremation and the impact this had on the bodies of all involved. This leads to us to pose a question: what role did the innovation of the pyre play within ideological and social change in the Middle to Late Neolithic of Britain?

This paper will consider two forms of evidence to explore the implications of cremation practices in the Late Neolithic in Scotland, although the observations and conclusions have wider geographical application. Firstly, the discovery and excavation in 2009 of a cremation cemetery within an extensive monument complex of the third millennium cal BC at Forteviot, Perth and Kinross (work undertaken by Noble and Brophy) where at least 18 individuals were buried will be discussed within the context of what was already known about Neolithic cremations in Scotland. Although we do not have evidence for pyre locations here, the treatment of human remains post-pyre is contingent on there having been a pyre, and sheds light on various aspects of cremation preparation, and aftermath. Secondly, experimental pyre firing undertaken on the island of Arran, North Ayrshire, in 2014 (work undertaken by MacGregor and Brophy) will be recounted with some observations made about the visceral impact cremation can have on spectators, not usually a focus of experimental cremations. This ‘Build N Burn’ experiment was designed

to explore the impact of the pyre on the bodies of the observers, not the dead (Brophy *et al.* 2016; 2017).

NEOLITHIC CREMATIONS IN SCOTLAND: A BRIEF OVERVIEW

Before considering the results of the Forteviot and Arran fieldwork, it is worth contextualising these with a brief review of what is known about Neolithic cremation practice in Scotland. The emergence of cremation appears to have been in the Early Neolithic, although evidence such as the charring of bones cannot always be attributed to the cremation of individuals on the pyre, and even then, instances remain rare (*cf.* Vyner 1986; Fowler 2010; Gibson 2016). For instance, ‘cremation’ may initially have occurred as a secondary consequence of the burning down of timber mortuary structures that contained or supported partially defleshed corpses (Kinnes 1992) or due to fires associated with tomb architectural elements (Fowler 2010, 10–11). Cremation as we more normally understand it in a prehistoric context appears to have become more commonplace towards the end of the fourth millennium cal BC. Recent reviews of the evidence from Britain (Parker Pearson *et al.* 2009; Noble & Brophy 2015; 2017; Gibson 2016) have identified that several monuments and monument complexes with extended periods of usage from the Early Neolithic through to the Bronze Age, from Stonehenge, Wiltshire to Duggleby Howe barrow, North Yorkshire to Cairnpapple Hill, West Lothian, were associated with the deposition of multiple cremation deposits in primary contexts, early in the life of the monument(s) or even before monumentality began. Reviews of Late Neolithic cremations were prompted by key recent discoveries at Forteviot (Noble & Brophy 2011a; 2015 and see below), and the radiocarbon dating of legacy cremated bone assemblages at Stonehenge (Parker Pearson *et al.* 2009; Parker Pearson 2012; Willis *et al.* 2016). At this stage it is worth noting that there is no sense that cremation was a dominant rite in Late Neolithic Britain and indeed appears to have formed only a small component of a broader range of strategies for dealing with the dead (*cf.* Jones 2008; Gibson 2016); the very rareness of cremation may have added to its impact.

The extent and frequency of cremation practice across Scotland is still not fully understood. Discoveries dating to the Early Neolithic are uncommon (Kinnes 1985; Barclay 2003; Fowler 2010, 10), with small but un-dated quantities of cremated bone found underlying mounds at Lochhill long cairn, Dumfries and Galloway (Masters 1973) and Pitnacree round barrow, Perth and Kinross (Coles & Simpson 1965; Sheridan 2010a) being rare examples. Scorched bones were found within the chambers at some Caithness chambered tombs such as Tulloch of Assery A, Highland (Davidson & Henshall 1991, 63), perhaps related to de-fleshing strategies played out within such monuments (Noble 2006, 136). Towards the end of the fourth millennium cremation appears to have become more commonplace relatively speaking and the deposition of cremated bone occurred in a wider range of contexts. For instance, cremated human bone was found within a pit cut into a ditch at Holly Road, Leven, Fife (Lewis & Terry 2004). Although at the time of excavation this was believed to be Bronze Age, subsequent dating places this deposit much earlier, to 3370–2930 cal BC, while a sample of bone retrieved from a Bronze Age cist at the same site was shown to be residual, dating to the middle centuries of the fourth millennium cal BC (ScARF 2012, section 3.3.1.2). Cremation burials, or token deposits of

cremated human bone, have also been found within pits at sites associated with Grooved Ware and timber structures such as Raigmore, Highland (Simpson 1996), Beckton Farm, Dumfries and Galloway (Pollard 1997) and Balfarg Riding School, Fife (Barclay & Russell-White 1993), while cremation appears to have been practiced in association with palisaded enclosures such as Dunragit, Dumfries and Galloway (Thomas 2015), Forteviot (see below) and Meldon Bridge, Scottish Borders (Speak & Burgess 1999). Associations with megaliths are also apparent: one of two cremation deposits associated with a standing stone socket at Orwell, Angus, produced a date of 4180 ± 35 BP (SUERC-18309, 2890–2630 cal BC at 2 σ : Ritchie 1974, 27–9; ScARF 2012, section 3.3.1.3.).

As well as these single deposits, largely indications of one-off cremations or the token deposition of human remains, a few cremation cemeteries were established in mainland Scotland more or less at the same time as similar cemeteries were also emerging in the south of Britain, that is around or just before 3000 cal BC. At Cairnpapple Hill, West Lothian, a series of eight cremated bone deposits were found in an arc of stone-sockets, none representing complete individuals, and two associated with bone pins (Piggott 1948). These were initially interpreted as Bronze Age (Barclay 1999) but more recent radiocarbon dating suggests these deposits dated to 3350–3020 cal BC (95% confidence; SUERC-25561: 4470 ± 35 BP; Sheridan *et al.* 2009) and thus pre-date the henge. A collection of cremation burials at Balbirnie stone circle, Fife, found within the stone sockets (Ritchie 1974), also dates to the latter centuries of the fourth millennium (Gibson 2010, 63); all the individuals here that have thus far been sexed were female (Gibson 2016), which accords with emerging evidence about the gender balance identified at the Stonehenge Late Neolithic cremation cemetery (Willis *et al.* 2016).

This is not a long list of examples, and it is a fair question to ask how common cremation really was in the Neolithic period in Scotland. The evidence is gradually increasing in quantity and quality, largely due to the examination of legacy collections of cremated bone found at Neolithic monuments, and similar exercises in the future may well reveal further examples which had previously been believed to be Bronze Age (as has been the case at many of the sites mentioned above and, initially, at Forteviot). Furthermore, the presence of complete and partial deposits of cremated individuals in pits, ditches and standing stone sockets is perhaps unsurprising; these are repositories that both protect fragile cremated remains but also enhance their chance of being discovered by archaeologists. What if cremated remains were placed in other contexts, such as unmarked pits (Brophy & Noble 2011), thrown into watery places or simply left to blow in the wind? Therefore, we may well not have a representative sample of material, and it is sobering to reflect that what we do have represents the remains of a few dozen individuals at most for a period of 500–700 years across all of Scotland. But we do have enough to suggest that although cremation was a relatively rare, and novel, process, nonetheless it was a significant innovation with local and regional implications.

THE FORTEVIOT CREMATION CEMETERY

It is within this rather sparse context that the identification of a Late Neolithic cremation cemetery at Forteviot in 2009 was so significant. This discovery was made during excavations within a henge monument (known as Forteviot Henge 1) as part of the Strathearn Environs

and Royal Forteviot (SERF) Project (Driscoll *et al.* 2010). Forteviot is an extensive ceremonial monument complex which was discovered as cropmarks on a terrace on the south side of the River Earn. Excavations were carried out there between 2007 and 2010 with eight trenches opened in all (Noble & Brophy 2011a; Brophy & Noble forthcoming).

The complex is dominated and framed by a massive Late Neolithic palisaded enclosure, some 265m in diameter, and defined by a succession of huge oak posts (up to 1m in diameter and 6m to 8m in length) which were probably free-standing, possibly set into a low earthen bank. This monument would have been entered via a long but narrow entrance avenue, and at least one living tree formed a component of the boundary (Noble & Brophy 2011b). Excavations also focused on two henge monuments, one within the palisaded enclosure (Henge 1), and one outwith (Henge 2), as well as timber circle surrounding Henge 1 and a double-ditched timber-fenced enclosure outside the palisaded enclosure which was probably Bronze Age and contained a triple cist and fallen standing stone (James & Gondek 2010). Bayesian modelling of dates from the earthwork and timber enclosures surrounding the cemetery location suggest the palisaded enclosure was constructed in the 28th to 25th centuries cal BC, the timber circle between 26th and 24th centuries cal BC, and Henge 1, which was also associated with Beaker sherds, the 23rd to 22nd centuries cal BC (Hamilton in Noble & Brophy 2015, 167).

The cremation cemetery was identified in 2009, during the excavation of the western half of the interior of Henge 1 (Fig. 6.1). The cremated remains were found in a series of nine discrete deposits, some in pits or within the socket of what appears to be a broken standing stone. Scattered cremated bone in silt layers across the henge suggest that later disturbance and truncation took place (including the insertion of a massive pit into the middle of the henge in the Early Medieval period) and thus it is likely the cemetery was more extensive when initially established (Noble & Brophy 2017). The burials were associated with eight or nine carbonised bone skewer pins, and a small pot, perhaps a charnel vessel for carrying embers to the pyre (Sheridan in Noble & Brophy 2017, 11–12). A series of radiocarbon dates demonstrate that the cemetery pre-dated the establishment of all the aforementioned circular monuments including Henge 1. Bayesian analysis of the set of dates retrieved from Forteviot show that the cemetery began in *3080–2900 cal BC (95% probability; start: Forteviot Cremation Cemetery)*, and probably in *2975–2905 cal BC (68% probability)*. The cemetery went out of use in *2885–2655 cal BC (95% probability; end: Forteviot Cremation Cemetery)*, and probably in either *2880–2815 cal BC (63% probability)* or *2790–2755 cal BC (5% probability)*. Thus, the cemetery was in use for a period of *25–395 years (95% probability)*, and probably *35–180 years (68% probability)*, amongst the earliest activity recorded at Forteviot by the SERF Project (Hamilton in Noble & Brophy 2017, 12ff). Therefore, the use of this location at Forteviot for a cremation cemetery may well have been a pivotal moment in the establishment of this as a sacred place for the next millennia (Noble & Brophy 2015; 2017). We do not, however, know where the pyres were located.

Analysis of the cremated remains (Leach 2012; Noble & Brophy 2017, 6–10) has shown that at least 18 individuals were buried here, eleven adults and seven children, although no babies or the very young were identified, and it was not possible to establish the sex of any of the individuals. There were several examples of the comingling of human remains, that is, cremated bones of more than one individual mixed within the same deposit or burial. The most common pairing was an adult with a subadult, including one burial where an adult was deposited with the finger bone of a child. It is tempting to interpret these pairings

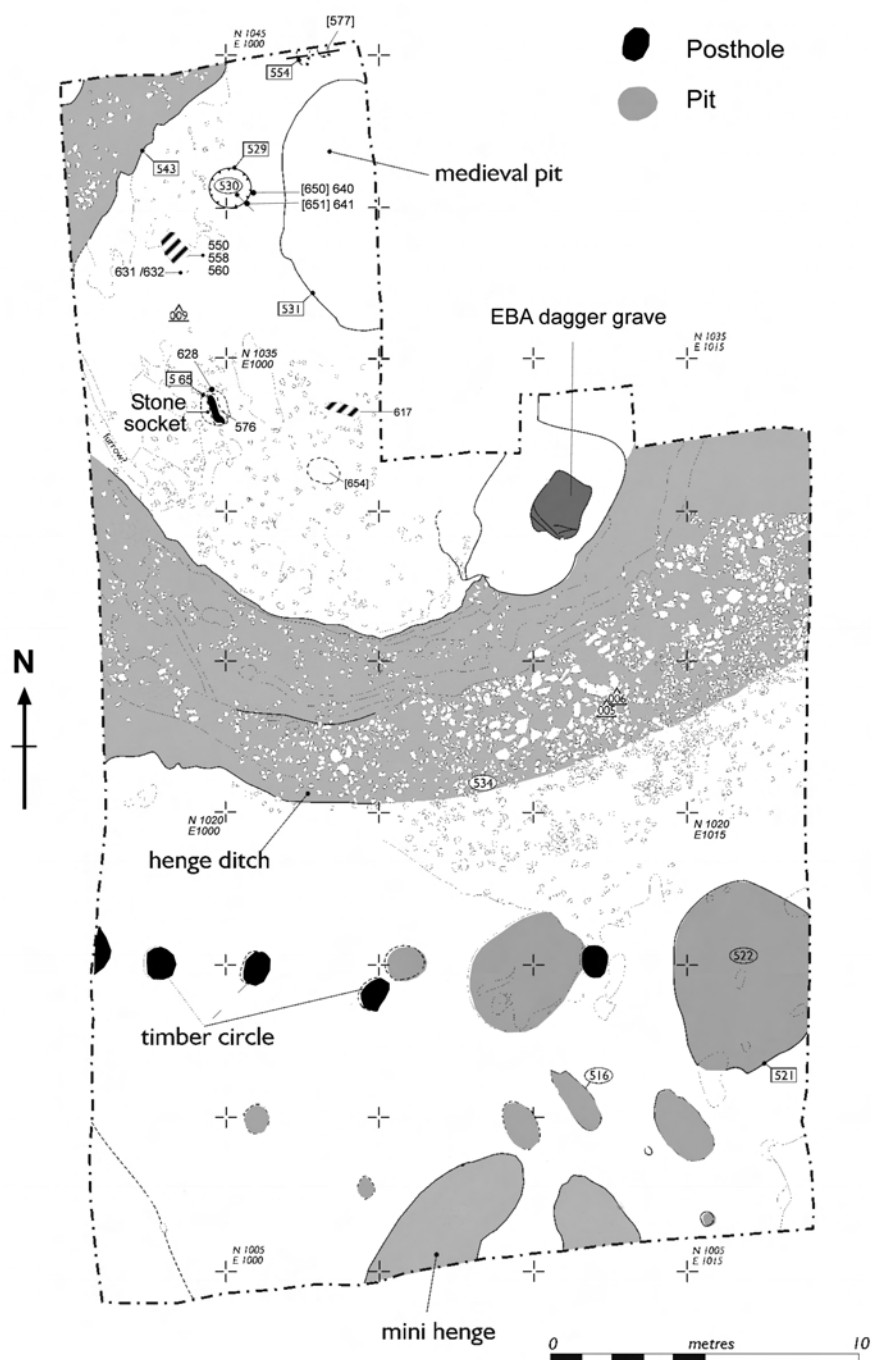


Fig 6.1: Plan of the Forteviot cremation cemetery. The arc of features within the henge interior including the stone socket (565) is where the cremated remains were found (drawn by Lorraine McEwan and Alison Sandison).

as parent and child although we have no way of telling this for sure. The cremated bone was fired to a high degree of ‘pyre efficiency’ which means that pyres were maintained for some time to a high temperature to burn off all soft tissue from the bodies (Leach 2012; and see McKinley 1995 for a similar pattern at Stonehenge), and the remains then carefully gathered and placed in organic containers (Fig. 6.2). Differential surface wear on some bone fragments suggest they were curated before final burial. Despite truncation and disturbance, this is the largest collection of Neolithic cremations found in Scotland to date.



Fig 6.2: Excavation of one of the discrete circular cremation deposits at Forteviot (photo: SERF Project).

The care taken treating the dead at Forteviot was matched by the care taken to remember this location, perhaps initially with one or more standing stones, and later a mound or some other kind of marker. The cemetery location was subsequently enclosed by a large Late Neolithic palisaded enclosure, then a timber circle, and then the Chalcolithic Henge 1, suggesting an ongoing obsession with enclosing this place again and again (Noble & Brophy 2011a; Brophy & Noble 2012). Remarkably, the henge ditch appeared to follow an arc of pits which contained the cremated remains and standing stone. In other words, the act of establishing a cremation cemetery at Forteviot appears to have set a chain of events in motion that continued, with reference to the cemetery, for centuries. A similar pattern can be identified at the closely contemporary cremation cemetery identified at Stonehenge. Here, cremated human remains recovered from the so-called Aubrey Holes have been dated to the Late Neolithic, and Parker Pearson *et al.* (2009, 23) have suggested through extrapolation that between 150 and 240 individuals were buried here over a period of 500 years. As with Forteviot, cremation activities appear to have helped to establish this place as significant enough for subsequent expansions and embellishments running on into the Bronze Age. Other cremation cemeteries in Britain appear to flourish from around the same time, or slightly earlier, from deposition at multiple foci at Dorchester-on-Thames, Oxfordshire (Atkinson *et al.* 1951; Whittle *et al.* 1992) to being part of a complex sequence of burial, deposition and mound building at Duggleby Howe barrow (Gibson & Bayliss 2010). Therefore, although evidence from British sites remains rare (and far less common than Neolithic cremations from Ireland), a growing body of data suggests cremation was present at certain high-status locations and likely of great significance.

Bearing this in mind, how did cremation change the way bodies were treated and perceived in the Neolithic, and how did this relate to social change in Scotland (and indeed Britain) around the end of the fourth millennium?

CREMATION AS A NOVEL PRACTICE

The process of prehistoric cremation, as identified in the archaeological record, has been studied intensively by McKinley (1997; 2013), and she has written of the various aspects of the technology of cremation. A number of stages of the treatment of the dead, from the pyre to final burial or deposition, can be traced with different degrees of confidence within the archaeological record, enough to suggest cremation offered a distinct set of new practices and decisions that offered variation or completely different experiences from earlier Neolithic mortuary practice, even if some traits are shared as noted above. Cremation for instance would have entailed novel ways of interacting with corpses, with for instance the intimacy associated with the careful gathering of fragmented and carbonised bone amidst the smoking pyre a new experience, an alternative to the collection of excarnated human remains. As Fowler (2004, 73) notes, ‘the flesh was visibly relocated through immolation’; Sørensen & Bille (2008, 255) go further: ‘fire is a means of destroying the dead’. This extreme reduction of the body in turn offered new opportunities for the dead to remain within easy everyday reach, incorporated within the fabric of pots for instance as bone tempering (Smith & Darvill 1990), ‘curation or distribution amongst the mourners’ (McKinley 2013, 150; and see Oestigaard 2009), exchanged between people or groups

(Fowler 2010, 17), or perhaps even worn as jewellery. Different ways of dealing with bodies after death may also have emerged, in the form for instance of mixed deposits of more than one individual (comingling), partial deposits of incomplete bodies or body parts, or the mixture of human and animal bone, in ways that would not have been possible or feasible with inhumations (although we do know versions of these body treatments did occur in Late Neolithic and Early Bronze Age Britain (Jones 2008; Gibson 2016)).

In discussions of the prehistoric character of cremation, moving from the archaeological record to an interpretation of the act itself, we should be cautious however. Downes (1999) notes that cremation rites in Bali were lengthy processes where the fire and the pyre were only one, rather brief, element of the rites, while Gibson (2016, 58) has more recently suggested that we should reflect carefully on imposing our concept of 'burial' on prehistoric societies at all, as 'it is becoming increasingly obvious that the treatment of human remains in the fourth to second millennia cal BC was totally alien to our own ideas'. In other words, cremation as a concept is a catch-all term that includes a series of different stages, undertaken in different locations, with perhaps a different group of actors, and leading to outcomes we should not necessarily expect to understand. Gibson's point is especially pertinent when we consider the most visible – and to us, troubling – stage of the process.

An innovation that cremation certainly brought was the very public spectacle of the body burning on top of some kind of pyre (also known as open cremation). This would have offered a very different experience to, for instance, the slow-motion decay of a corpse on an excarnation platform or laid out in the open. To our modern eyes, there is probably little that seems to be more alien than standing watching a recently deceased loved one ablaze. McKinley (2013, 155–6) notes that modern cremators and cremulators take little time to reduce a corpse to a fine white powder, and these processes take place behind closed doors. By way of contrast, those who have observed contemporary cremation rites, such as those undertaken by the Hindu Balinese, note the interactive nature of the process with big crowds including children watching on, and active management of the burning of the body, for instance prodding and moving it with sticks (Downes 1999, 22–3). The distinctiveness of the pyre and the memories that it creates therefore are perhaps the most challenging for us to understand, as well as to recognise archaeologically.

Experimental work focusing on cremation rites has tended to focus on Bronze Age and Anglo-Saxon practice, but nonetheless is informative in giving us an insight into the dramatic, dangerous and memorable nature of pyre events. Marshall (2011, 14–15) has summarised previous experimental pyre firings, as well as presenting his own experiments. He notes that experimental work has tended to focus on 'osteological investigation' although a smaller body of experimental work, including his own, has concentrated more on pyre architecture, firing logistics and the material aftermath (Marshall 2011, 14–15; and see McKinley 2013; Snoeck & Schulting 2013). A typical project of this kind was undertaken in 2009 by Alison Sheridan (2010b); she conducted the cremation of a pig and various Bronze Age-style artefacts and bone pins at the now defunct Archaeolink Prehistory Park, Aberdeenshire, to better understand taphonomic processes related to materials placed on the pyre. Marshall's (2011, 15ff) own experimental work focused on the construction of a series of pyre types, based on excavation evidence and the experiments of others, and

the monitoring and quantification of the processes before, during and after the firing of each pyre.

Such research activities are of course important but do not, we would argue, capture or consider the impact cremation has on those who *experience* it as participants or spectators. Marshall (2011, 15) notes that this has occasionally been the objective of public-facing experimental exercises, such as that carried out during the Festival of British Archaeology, in Cardiff, in 2009 where a pig was cremated atop a simple box pyre for the purpose of ‘public education’, or the experimental cremation of a pig as part of a family Midsummer celebration on a beach on the island of Bute, Argyll and Bute, in 2011 (Clarke & Duffy 2012, 65). Marshall (2011, 14) notes that such experiments are ‘part of a recent trend towards mounting such events for the purposes of public ‘edu-tainment’, an excellent motive, but usually unmatched by scientific content’. Yet for a society who are absolutely sheltered from the reality of cremation due to the highly mechanised and clinical crematoria we use (Parker Pearson 1999, 42; Williams 2004, 271; McKinley 2013, 155) the opportunity for the public to witness a cremation pyre alight offers a rare and powerful insight into prehistoric practices and, importantly, attitudes to death and the human body, and we would argue this impact need not be accompanied by detailed scientific recording of the process itself.

The act of cremation in prehistory would have been dramatic, and these processes would have been all the more impactful when carried out with an actual dead human body on the pyre (as opposed to a pig), and not just any person, but a dead relative or friend of those watching on and participating. Williams (2004, 271) has written evocatively about the unpleasant and visceral processes that would have occurred as a body burns; he was writing about Anglo-Saxon cremations but again the same applies to prehistory and it is worth quoting at length:

‘Firstly, the coverings of wood, bark, hides, leather or textile (if pyre material, canopies and coffins covered the body) were burnt off to reveal the body. Next, the clothing, hair, skin and fat were sequentially destroyed revealing the muscles, organs and bone. As the body was heated, the evaporation of the bodily liquids may have occurred so speedily that jets of steam sprayed from the body. Once heated, the body fat upon the clothed cadaver would perpetuate the cremation process, the corpse itself seemingly accentuating the transformation initiated by the fire. The muscles can tighten under the effects of heat followed by the charring of the muscles and organs before they were consumed by the flames. As the cremation continued, the bony frame of the body including the rib-cage and the skull was revealed, penetrated and fragmented by the fire’.

This remarkable and troubling sequence of events demonstrates the memorable process that cremation must have been, and if as rare in the Neolithic as strongly suggested within the archaeological record, then this would have added to the affect it had on spectators. We cannot know what impact witnessing the gradual exposure of ‘skeletal parts and internal organs’ (Sørensen & Bille 2008, 256) would have had on a Neolithic individual, but it would have been tough to forget. The development of experimental work that can assess this kind of visceral and emotive impact (to an extent!) as opposed to simply recording things like fire temperature, duration and fuel quantities may well give us an insight into why cremation played such a significant role in place-making and the emergence of major monumental centres, as well as being a compelling element of a new ideology.

BURNING THE CIRCLE CREMATION PYRES

In 2014, two of us (Brophy and MacGregor) undertook a series of experimental pyre firings on the island of Arran, within a timber circle that we had previously constructed and partially burnt down in 2013 (Brophy *et al.* 2016; 2017). This was a public-facing event called Burning the Circle with the major objective being to create memorable fire-based experiences for the audience, accompanied by information on the nature of cremation and ceremony in Scotland's Neolithic and Bronze Age. We wanted to stage-manage the process (and cremations in prehistory were no doubt stage-managed and rulebound) in order to maximise the visual and sensory experience of watching pyres burn over a period of several hours. Therefore, the pyres were lit at dusk, accompanied by a degree of performance from a team of participants.

Four pyres were constructed (Fig. 6.3), all of which to one extent or another were based on evidence from excavations and experimental archaeology (*e.g.* Marshall 2011, 53), including a simple log pile, a framed stack and a box pyre, with a large wood pile located in the centre of our timber circle to act as a bonfire. The 'cremation' activity was also set in a location within the landscape with spectacular views, something apparent in prehistoric and contemporary practice (*cf.* Parker Pearson 1999, 50; Jonuks & Konsa 2007). Quantities of wood being used were monitored, and a series of objects were placed inside or on top of the pyres (including a dry but unfired urn pot, a supermarket-bought chicken and lithics);



Fig 6.3: Several of the different pyres after construction on Arran in 2014, built within a timber circle we erected for the previous year's Burning the Circle event (photo: Kenneth Brophy).

we felt we did not want to sacrifice a whole pig in the name of public spectacle given this had been done on several occasions before under more controlled circumstances. The fires were lit at dusk (Fig. 6.4) after a short talk about prehistoric cremation was given to the



Fig. 6.4: The pyres alight (photo: Kenneth Brophy).



Fig. 6.5: The morning after: the charred remnants of one of our pyres (photo: Kenneth Brophy).

audience, and the burning pyres were then maintained for around four hours. The following morning, we photographically recorded the remnants of each pyre (Fig. 6.5) and recovered the fully fired pot which had survived the process intact (Fig. 6.6).

This experiment was watched by around 50 to 60 people, few of whom were archaeologists. As the fires were lit, and then progressed, the audience reacted in different ways to sudden flares bursting from the pyres to popping sounds emerging from the fires, with admiration, fear and fascination all evident (Brophy *et al.* 2017, 448). The proximity of the spectators to the pyres changed through the evening, starting as close as was permitted, before backing off as the fires took hold and warmed faces and hands, and then the audience gradually moved back towards the pyres as the flames died down to a glow. Team members stoked and added to the fires, moving around the flames in the dusk. The impact of the fires appeared to be enhanced by the growing darkness, with senses other than vision being stimulated. This was also a highly social event, encouraging conversations, social eating and drinking. For those of us actively participating in the process – lighting and maintaining fires – it was a draining experience, physically and mentally. And none of us had an emotional stake in the cremations: there were no bodies on the pyres, no relatives to be mourned, no human remains to be treated before the pyres were lit or carefully gathered up once the fires had died down. What impact all of these factors would have had on us



Fig. 6.6: A replica pot was fired in one of our pyres and survived the experience (photo: Kenneth Brophy).

and the audience can only be speculated upon although as Gibson (2016) has warned, we should be cautious about imposing our own ideas and value systems onto such processes.

CONCLUSION: WERE MEMORIES CARRIED ON WARM AIR?

In this paper, we have argued that because cremation is an increasingly recognised element of the mortuary repertoire of Late Neolithic in Scotland (and indeed beyond) then we perhaps need to reflect more on what this means for the treatment of bodies after death, and the disposal of those remains. Evidence from excavations such as Forteviot suggest that a great deal of care must have been taken when gathering up fragmentary human remains after the fire had died out, and that bodies were being mixed after death, perhaps with some element of curation playing its part as well. The burial of body parts and token deposits, and perhaps also the retention of some bones, is also hinted at, practices evident elsewhere too. But cremation was not just all about the body of the deceased. It was also about the experiences of the living – participants preparing and tending to the fire, spectators blasted by warm air, relatives collecting recognisable body parts and objects from amidst the ashes – and about creating unforgettable memories.

Noble (2006, 58) has argued that burning down timber monuments in the Early Neolithic in Scotland (such as the timber halls) may have created flashbulb memories, ‘memories ... associated with a high level of recall clarity and vividness’. The concept of flashbulb memories was initially developed by Brown and Kulik (1977) who emphasised the psychological impact of shocking events on groups of people who witnessed – or even heard about – such events (to use a classic modern example, the JFK assassination). Could

it be that cremation pyres offered a Neolithic equivalent (Brophy *et al.* 2017, 443–4), binding together groups of individuals who took part or watched one or more emotionally charged and visceral cremation pyre burn? The physical impact on the Burning the Circle spectators, and the touching details of the careful bone collection strategies evident at Forteviot, both suggest to us that the physical and emotional experiences of cremation on the living may have been in their own ways substantial and transformational. This is perhaps the tipping point when wider social changes begin to impact on individual lives.

Cremation is a powerful experience, one that generates memories and impacts on the body as well as the mind. It is only by considering the impact that pyres and cremation would have had on all participants, living and dead, that we can begin to understand how its use became more commonplace (gradually) as the Neolithic went on. Downes (1999, 28) warns, ‘if we do not think beyond the small grey fragments of bone we encounter as residues, we cannot do justice to the intentions and beliefs of those we study’. It is hoped that observations in this paper based on these two very different fieldwork experiences can add a contribution to the discussion of Late Neolithic bodies and in turn how this can inform our understanding of localised and wider social and ideological change in the context of the beliefs and actions of people in Late Neolithic Scotland and beyond.

ACKNOWLEDGEMENTS

We would like to thank the session organisers and editors for accepting our paper and for their patience during the production of the written version. Brophy and Noble would like to thank our colleagues on the SERF Project and all the team during the 2009 season of excavation; this work was funded by Historic Scotland (now Historic Environment Scotland) and the University of Glasgow. We would also like to thank Derek Hamilton for his careful analysis of the radiocarbon dates associated with the cremation cemetery. The analysis of the cremated bone was undertaken by Stephany Leach, and we are indebted to her for the detail included in this paper. Further advice on the contextualisation of Forteviot and interpretation of the ceramic evidence has been given by Alison Sheridan. MacGregor and Brophy would like to thank all those who helped with the 2014 Burning the Circle event in Arran, especially Corinna Goeckeritz and the National Trust for Scotland. The wood for the pyres was provided by the Forestry Commission, and the chicken by Ross Wallace; the pyres were built with help from Thistle Camp volunteers.

REFERENCES

- Atkinson, R. J. C., Pigott, C. M. & Sanders, N. K. (1951) *Excavations at Dorchester, Oxon.* Oxford, Ashmolean Museum.
- Barclay, G. J. (1999) Cairnpapple revisited: 1948–1998. *Proceedings of the Prehistoric Society* 65, 17–46.
- Barclay, G. J. (2003) The Neolithic. In I. Ralston and K. Edwards (eds.) *Scotland after the Ice Age. Environment, Archaeology and History, 8000 BC–AD 1000*, 127–50. Edinburgh, Edinburgh University Press.
- Barclay, G. J. and Russell-White, C. J. (1993) Excavations in the ceremonial complex of the fourth to third millennium BC at Balfarg/Balbirnie, Glenrothes, Fife. *Proceedings of the Society of Antiquaries of Scotland* 123, 43–110.

- Bradley, R. (2007) *Prehistoric Britain and Ireland*. Cambridge, Cambridge University Press.
- Brophy, K., Goeckeritz, C. and MacGregor, G. (2016) Build N Burn: Using fire to create memorable learning experiences for the public. *Antiquity Project Gallery*. <http://antiquity.ac.uk/projgall/brophy350> (accessed on 9th May 2016).
- Brophy, K., Goeckeritz, C. and MacGregor, G. (2017) Build N Burn: Using fire as a tool to evoke, educate and entertain. *Archaeological Journal* 174, 437–63.
- Brophy, K. and Noble, G. (2011) Within and beyond pits: Deposition in lowland Neolithic Scotland. In H. Anderson-Whymark and J. Thomas (eds.) *Regional Perspectives on Neolithic Pit Deposition. Beyond the Mundane*, 63–76. Oxford, Oxbow.
- Brophy, K. and Noble, G. (2012) Henging, mounding and blocking: The Forteviot henge group. In Gibson, A. (ed.) *Enclosing the Neolithic. Recent Studies in Britain and Europe*, 21–35. Oxford, British Archaeological Reports.
- Brophy, K. and Noble, G. (forthcoming) *Prehistoric Forteviot* (=SERF Monograph 2). York, Council for British Archaeology.
- Brown, R. and Kulik, J. (1977) Flashbulb memories. *Cognition* 5, 73–99.
- Clark, S. and Duffy, P. (2012) Experimental Bronze Age cremation. In P. Duffy (ed.) *One Island, Many Voices: Bute, Archaeology and the Discover Bute Landscape Partnership Scheme*, 65. Donington, Shaun Tyas.
- Coles, J. and Simpson, D. D. A. (1965) The excavation of a Neolithic round barrow at Pitnacree, Perthshire, Scotland. *Proceedings of the Prehistoric Society* 31, 34–57.
- Cooney, G. (2014) The role of cremation in mortuary practice in the Irish Neolithic. In I. Kuijt, C. P. Quinn and G. Cooney (eds.) *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, 189–206. Tucson, University of Arizona Press.
- Cooney, G. (2016) Pathways to ancestral worlds: Mortuary practice in the Irish Neolithic. In K. Brophy, G. MacGregor and I. Ralston (eds.) *The Neolithic of Mainland Scotland*, 74–94. Edinburgh, Edinburgh University Press.
- Davidson, J. L. and Henshall, A. S. (1991) *The Chambered Cairns of Caithness*. Edinburgh, Edinburgh University Press.
- Downes, J. (1999) Cremation: A spectacle and a journey. In J. Downes and T. Pollard (eds.) *The Loved Body's Corruption*, 19–29. Glasgow, Cruithne Press.
- Driscoll, S. T., Brophy, K. and Noble, G. (2010) The Strathearn Environs and Royal Forteviot Project (SERF). *Antiquity Project Gallery*. <http://antiquity.ac.uk/projgall/driscoll323/> (accessed on 10th May 2016).
- Fowler, C. (2004) *The Archaeology of Personhood*. London, Routledge.
- Fowler, C. (2010) Pattern and diversity in the Early Neolithic mortuary practices of Britain and Ireland: Contextualising the treatment of the dead. *Documenta Praehistorica* 37, 1–22.
- Gibson, A. (2010) Dating Balbirnie: Recent radiocarbon dates from the stone circle and cairn at Balbirnie, Fife, and a review of its place in the overall Balfarg/Balbirnie site sequence. *Proceedings of the Society of Antiquaries of Scotland* 140, 51–77.
- Gibson, A. (2016) Who were these people? A sideways view and a non-answer of political proportions. In K. Brophy, G. MacGregor and I. Ralston (eds.) *The Neolithic of Mainland Scotland*, 57–73. Edinburgh, Edinburgh University Press.
- Gibson, A. and Bayliss, A. (2010) Recent research at Duggleby Howe, North Yorkshire. *Archaeological Journal* 166, 39–78.
- James, H. and Gondek, M. (2010) *Forteviot double enclosure complex excavations 2010: Data Structure Report*. Unpublished SERF interim report. http://www.gla.ac.uk/media/media_183896_en.pdf (accessed on 10th May 2016).
- Jones, A. (2008) How the dead live: Mortuary practices, memory and the ancestors in Neolithic and Early Bronze Age Britain and Ireland. In J. Pollard (ed.) *Prehistoric Britain*, 177–201. Oxford, Blackwell.

- Jonuks, T. and Konsa, M. (2007) The revival of prehistoric burial practices: Three archaeological experiences. *Electronic Journal of Folklore* 37, 91–110.
- Kinnes, I. (1985) Circumstance, not context: The Neolithic of Scotland as seen from the outside. *Proceedings of the Society of Antiquaries of Scotland* 115, 15–57.
- Kinnes, I. (1992) Balnagowan and after: the context of non-megalithic mortuary sites in Scotland. In N. Sharples and A. Sheridan (eds.) *Vessels for the Ancestors*, 83–103. Edinburgh, Edinburgh University Press.
- Leach, S. (2012) *Report on the human skeletal remains excavated from the prehistoric ceremonial complex: site at Forteviot, Perthshire (2008–2010)*. Glasgow, Unpublished report for the SERF project.
- Lewis, J. and Terry, J. (2004) The excavation of an early Bronze Age cemetery at *Holly Road*, Leven, Fife. *Tayside and Fife Archaeological Journal* 10, 23–53.
- Malone, C. (2001) *Neolithic Britain and Ireland*. Stroud, Tempus.
- Marshall, A. (2011) *Experimental Archaeology*. Oxford, Archaeopress.
- Masters, L. J. (1973) The Lochhill long cairn. *Antiquity* 47, 96–100.
- McKinley, J. I. (1995) Human Bone. In Cleal, R. M. J., Walker, K. E. and Montague, R. 1995. *Stonehenge in its Landscape: Twentieth-Century Excavations*, 451–60. London, English Heritage.
- McKinley, J. (1997) Bronze Age ‘barrows’, funerary rites and rituals of cremation. *Proceedings of the Prehistoric Society* 63, 129–45.
- McKinley, J. (2013) Cremation: Excavation, analysis and interpretation of material from cremation related-contexts. In L. Nilsson Stutz and S. Tarlow (eds.) *The Oxford Handbook of the Archaeology of Death and Burial*, 147–72. Oxford, Oxford University Press.
- Noble, G. (2006) *Neolithic Scotland*. Edinburgh, Edinburgh University Press.
- Noble, G. and Brophy, K. (2011a) Ritual and remembrance at a prehistoric ceremonial complex in central Scotland: Excavations at Forteviot, Perth and Kinross. *Antiquity* 85, 787–804.
- Noble, G. and Brophy, K. (2011b) Big enclosures: The later Neolithic palisaded enclosures of Scotland in their northwestern European context. *European Journal of Archaeology* 14, 60–87.
- Noble, G. and Brophy, K. (2015) Transforming place and architecture through cremation: Cremation traditions at the third millennium BC monument complex at Forteviot, central Scotland. In K. Brink, S. Hyden, K. Jennbert, L. Larsson and D. Olousson (eds.) *Neolithic Diversities: Perspectives from a Conference in Lund, Sweden*, 164–72. Department of Archaeology and Ancient History, Lund.
- Noble, G. and Brophy, K. (2017) Cremation practices and the creation of monument complexes: The Neolithic cremation cemetery at Forteviot, Strathearn, Perth and Kinross, Scotland and its comparanda. *Proceedings of the Prehistoric Society* 83, 213–45.
- Oestigaard, T. (1999) Cremation as transformations: When the dual cultural hypothesis was cremated and carried away in urns. *European Journal of Archaeology* 2, 345–64.
- Parker Pearson, M. (1999) *The Archaeology of Death and Burial*. Stroud, Sutton Press.
- Parker Pearson, M. (2012) *Stonehenge: Exploring the Greatest Stone Age Mystery*. London, Simon & Schuster.
- Parker Pearson, M., Chamberlain, A., Jay, M., Marshall, P., Pollard, J., Richards, C., Thomas, J., Tilley, C. and Welham, K. (2009) Who was buried at Stonehenge? *Antiquity* 83, 23–39.
- Piggott, S. (1948) The Excavations at Cairnpapple Hill, West Lothian. *Proceedings of the Society of Antiquaries of Scotland* 82, 68–123.
- Pollard, T. (1997) Excavations of a Neolithic settlement and ritual complex at Beckton Farm, Lockerbie, Dumfries and Galloway. *Proceedings of the Society of Antiquaries of Scotland* 127, 69–121.
- Ritchie, J. N. G. (1974) Excavation of the stone circle and cairn at Balbirnie, Fife, *Archaeological Journal* 131, 1–32.
- ScARF Sheridan, A. and Brophy, K. (eds.) (2012) *Neolithic panel report*, Scottish Archaeological Research Framework: Society of Antiquaries of Scotland. <http://www.scottishheritagehub.com/> (accessed on 9th May 2016)

- Sheridan, J. A. (2004) Going round in circles? Understanding the Irish grooved ware 'complex' in its wider context. In H. Roche, E. Grogan, J. Bradley, J. Coles and B. Raftery (eds.) *From Megaliths to metal. Essays in honour of George Eogan*, 26–37. Oxford, Oxbow Books.
- Sheridan, A. (2010a) Scotland's Neolithic non-megalithic round mounds: New dates, problems, and potential. In J. Leary, T. Darvill and D. Field (eds.) *Round Mounds and Monumentality in the British Neolithic and Beyond*, 28–52. Oxford, Oxbow Books.
- Sheridan, A. (2010b) Cremating Miss Piggy. An experimental Bronze Age-style cremation. Paper given at 'A lad o'pairs' – a day conference in memory of Ian Shepherd (unpublished).
- Sheridan, J. A., Bradley, R. J. B. and Schulting, R. (2009) Radiocarbon dates arranged through National Museums of Scotland Archaeology Department during 2008/9. *Discovery and Excavation Scotland* 10 (New Series), 214–16.
- Simpson, D. D. A. (1996) Excavation of a kerbed funerary monument at Stoneyfield, Raigmore, Inverness, Highland, 1972–3. *Proceedings of the Society of Antiquaries of Scotland* 126, 53–86.
- Smith, I. F. and Darvill, T. (1990) The prehistoric pottery. In A. Saville, *Hasleton North: the excavation of a Neolithic long cairn of the Cotswold-Severn group*, 141–52. London, HBMCE Archaeological Report 13.
- Snoeck, C. and Schulting, R. (2013) Fire and bone: An experimental study of cremation. *Experimental Archaeology*, 2013/2. <http://exarc.net/issue-2013-2/ea/fire-and-bone-experimental-study-cremation> (accessed on 22nd March 2016).
- Sørensen, T. F. and Bille, M. (2008) Flames of transformation: The role of fire in cremation practices. *World Archaeology* 40, 253–67.
- Speak, S. and Burgess, C. (1999) Meldon Bridge: A centre of the third millennium BC in Peeblesshire. *Proceedings of the Society of Antiquaries of Scotland* 129, 1–118.
- Thomas, J. (1999) *Understanding the Neolithic*. London, Routledge.
- Thomas, J. (2010) The return of the Rinyo-Clacton folk? The cultural significance of the grooved ware complex in Late Neolithic Britain. *Cambridge Archaeological Journal* 20, 1–15.
- Thomas, J. (ed.) (2015) *A Neolithic Ceremonial Complex in Galloway. Excavations at Dunragit and Droughduil, 1999–2002*. Oxford, Oxbow Books.
- Vyner, B. (1986) Evidence for mortuary practices in the Neolithic and burial mounds and cairns of northern Britain. *Scottish Archaeological Review* 4, 11–16.
- Whittle, A., Atkinson, R. J. C., Chambers, R., Thomas, N., Harman, M., Northover, P. and Robinson, M. (1992) Excavations in the Neolithic and Bronze Age Complex at Dorchester-on-Thames, Oxfordshire, 1947–1952 and 1981. *Proceedings of the Prehistoric Society* 58, 143–201.
- Williams, H. (2004) Death warmed up: The agency of bodies and bones in early Anglo-Saxon cremation rites. *Journal of Material Culture* 9, 263–91.
- Willis, C., Marshall, P., McKinley, J., Pitts, M., Pollard, J., Richards, C., Richards, J., Thomas, J., Waldron, T., Welham, K. and Parker Pearson, M. (2016) The dead of Stonehenge. *Antiquity* 90, 337–56.

Dismembering bodies and atypical human deposits of the 4th millennium cal BC in the Upper-Rhine valley: Part of sacrificial practices?

Philippe Lefranc, Anthony Denaire, Christian Jeunesse and Bruno Boulestin

INTRODUCTION

The practice of interring bodies in circular pits, generally former storage pits, within settlements is characteristic of a number of 4th millennium cal BC cultural groups distributed between the central Rhône valley and the Carpathian basin (Fig. 7.1). This funerary rite has long interested scholars of the Neolithic, who have attempted to make sense of these diverse assemblages (Lichardus 1986; Schweitzer 1987; Nickel 1998). Recent studies, benefitting from new field data (*e.g.* Jeunesse 2010; Lefranc *et al.* 2010; 2011a; 2012; 2015), have demonstrated the existence of a coherent funerary system, from which a number of recurring burial rites emerge.¹ However, there are burials that do not conform to the overall pattern. An example of unconventional burials are those that were interred alongside an individual placed in the conventional flexed position. This type of unconventional burial can be defined as ‘funerary accompaniment’, which were people (possibly slaves) who were ritually killed during the funerary process of an important individual in order to accompany them in death. Other unconventional burials are those of isolated or multiple individuals placed in unconventional positions. The focus of this paper is the physical and anthropological evidence from unconventional burials that have recently been excavated at sites of the Michelsberg and Munzingen cultures in the Upper-Rhine valley. It is hypothesised that these individuals were sacrificial victims. A number of possible explanations, including ‘peripheral accompaniment’ (people killed during the funerals but not buried with the main deceased) and victims of acts of war, are discussed. We draw on ethnographic work to consider sacrificial practices and the role of violence in the treatment of the post-sacrificial body.

FUNERARY PRACTICES OF THE MICHELBERG AND MUNZINGEN CULTURES

Chronological and geographical framework

The practice of burial in a circular pit, which includes other types of deposits not discussed in this contribution (including the deposition of whole animals and assemblages of

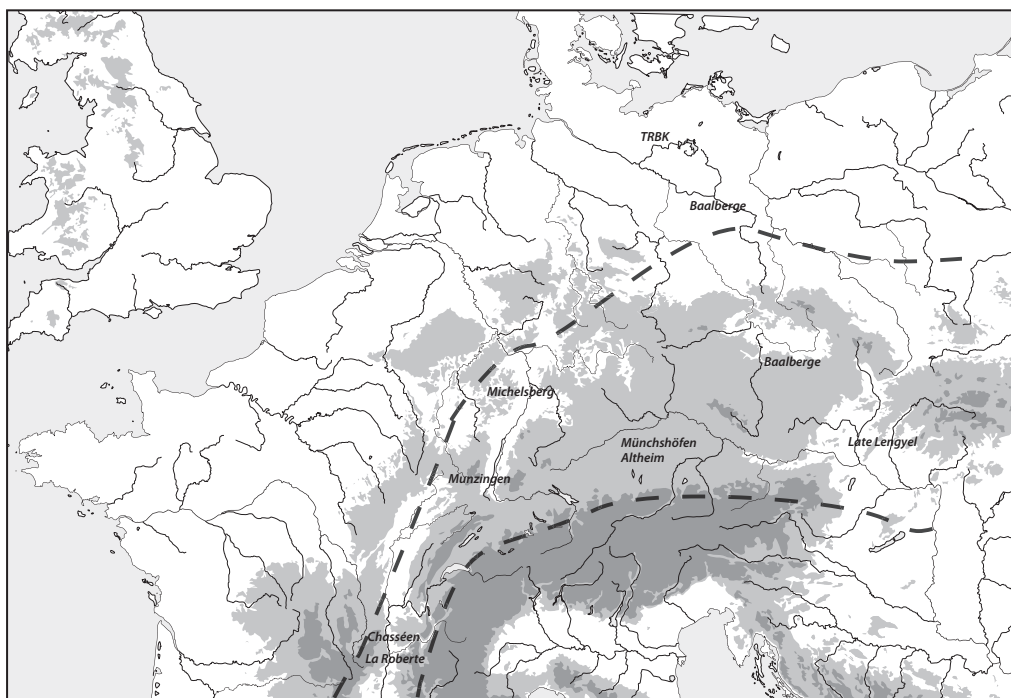


Fig. 7.1: Geographical distribution of 4th millennium cultures practicing burial in circular pits (P. Lefranc, Institut National de Recherches Archéologiques Préventives).

complete ceramic vessels) is part of a wide-spread phenomenon, which probably originates in the epi-Lengyel Münchshöfen culture of Lower Bavaria (Lefranc *et al.* 2015; 2017). The start date of this practice in the Münchshöfen culture cannot be determined with complete certainty, but it develops during the course of the 44th century cal BC (4400–4300) and disappears after 4000 cal BC (Meixner 2009). The advent and development of inhumation in circular pits in Bavaria is therefore largely contemporary with the epi-Rössen horizon (whose geographical distribution is centred on the Rhine), and precedes their appearance in the Michelsberg culture by three centuries, where the earliest examples of this practice are attributed to the early Michelsberg (phase MKII), radiocarbon dated to about 4000 cal BC. As the Münchshöfen and Michelsberg cultures are in close contact in the Regensburg area (central Lower Bavaria), we can hypothesise that the appearance of this burial rite during the Michelsberg culture was as a result of direct influence from the late Münchshöfen culture.

The corpus of Michelsberg inhumations in circular pits currently stands at above 150 individuals. These well-dated burials are found from the early Michelsberg (MKII) to the later Michelsberg (MKIV). More than two-thirds of these inhumations were found on settlements in Basse-Alsace and less than a third in Baden-Württemberg. Outside of these two regions, this type of deposit is extremely rare and beyond Mainz, the number of circular pit burials dwindles considerably. In Westphalia, Lower Saxony and in the western Michelsberg (the Paris basin, western Belgium and the Dutch Limburg) no examples of burial in circular pits have been reported. By combining the phasing of the few pots

deposited with inhumations and the numerous radiocarbon dates, the majority of the burials can be attributed to the middle and late Michelsberg phases (MKIII and MKIV), or within the short interval between 3950 and 3800 cal BC. After this date, the Michelsberg is gradually abandoned in the region which stretches from Haute-Alsace to the Rhine-Main confluence and is then replaced by the Munzingen B culture. This culture seems to have developed in the north of Haute-Alsace and the Kaiserstuhl (Baden-Württemberg) during the early and middle Michelsberg phases (MKII–MKIII; Munzingen A1) and extended first into the Strasbourg region, and then to Hesse during the later and final phases of the Michelsberg (MKIV–MV). At Munzingen B sites in Basse-Alsace and Baden-Württemberg, 53 examples of circular pit burials are known. This practice does not, however, seem to have accompanied the diffusion of the Munzingen culture through the Neckar valley and into the Wetterau region. In the Mulhouse region (Haute-Alsace), 45 circular pit burials from the Munzingen culture are known. Based on radiocarbon dates, these burials are probably all post 3900 cal BC.

The diffusion of the circular pit burial practice does not stop south of the Rhine Valley, but stretches into the Middle Neolithic cultures of the middle Rhône valley (La Roberte culture) and, to the east, into the Baalberg and late Lengyel cultures, and the late Baden culture (Jeunesse 2010).

Conventional and unconventional burials

In Alsace, as elsewhere, the burials can be divided into different well-defined categories:

1. Individual burials in conventional positions. The bodies of males, females and children were placed in a crouched position on their left side, with the legs contracted (Fig. 7.2). Some individuals received grave goods, mostly beakers, open bowls, bottles and antler cups.
2. Individual burials in unconventional positions. These individuals have high diversity of body positions, possibly at times random (Figs. 7.3, 7.4 & 7.5). With one exception (at Colmar, Haute-Alsace), they do not have grave goods.
3. Multiple burials of several individuals in unconventional positions (Fig. 7.6).
4. Multiple burials of several individuals in conventional positions.
5. Multiple and asymmetrical burials of several individuals with one body in a conventional position (identified as the ‘principal’ death) and one or more bodies in unconventional or irregular positions (considered here as the ‘funerary accompaniment’, see below).
6. Burials of parts of the body, individuals in anatomical disarray, or isolated bones.

We focus here on the individuals interred in unconventional or irregular positions and particularly those that appear in isolation or in multiple burials of various numbers (see categories 2 and 3 above). To date, only the multiple and asymmetrical burials (category 5) have truly caught the attention of researchers. The existing research has resulted in the recognition of the practice of ‘funerary accompaniments’ (Jeunesse 2010), which is a widespread practice worldwide that has been well documented in ethnography (Testart 2004). This burial rite involves the killing of one or more dependant ‘companions’ (mostly slaves) at the funeral of an important person. This interpretative framework can be applied to the currently known small number of asymmetrical (*i.e.* one regular burial and one in a



Fig. 7.2: Example of an individual buried in a regular body position, Gougenheim, Alsace, France (photo: G. Alix, Institut National de Recherches Archéologiques Préventives).



Fig. 7.3: Female burial in irregular position, pit 1076, Gougenheim. At other depths, the fill of the pit also contained three other individuals (See also Fig 7.6; photo: G. Alix, Institut National de Recherches Archéologiques Préventives).



Fig. 7.4: Non-adult buried in an irregular body position, pit 1077, Gougenheim. At other depths, the fill of the pit also contained two adult females and an adolescent in irregular body positions (photo: G. Alix, Inrap).

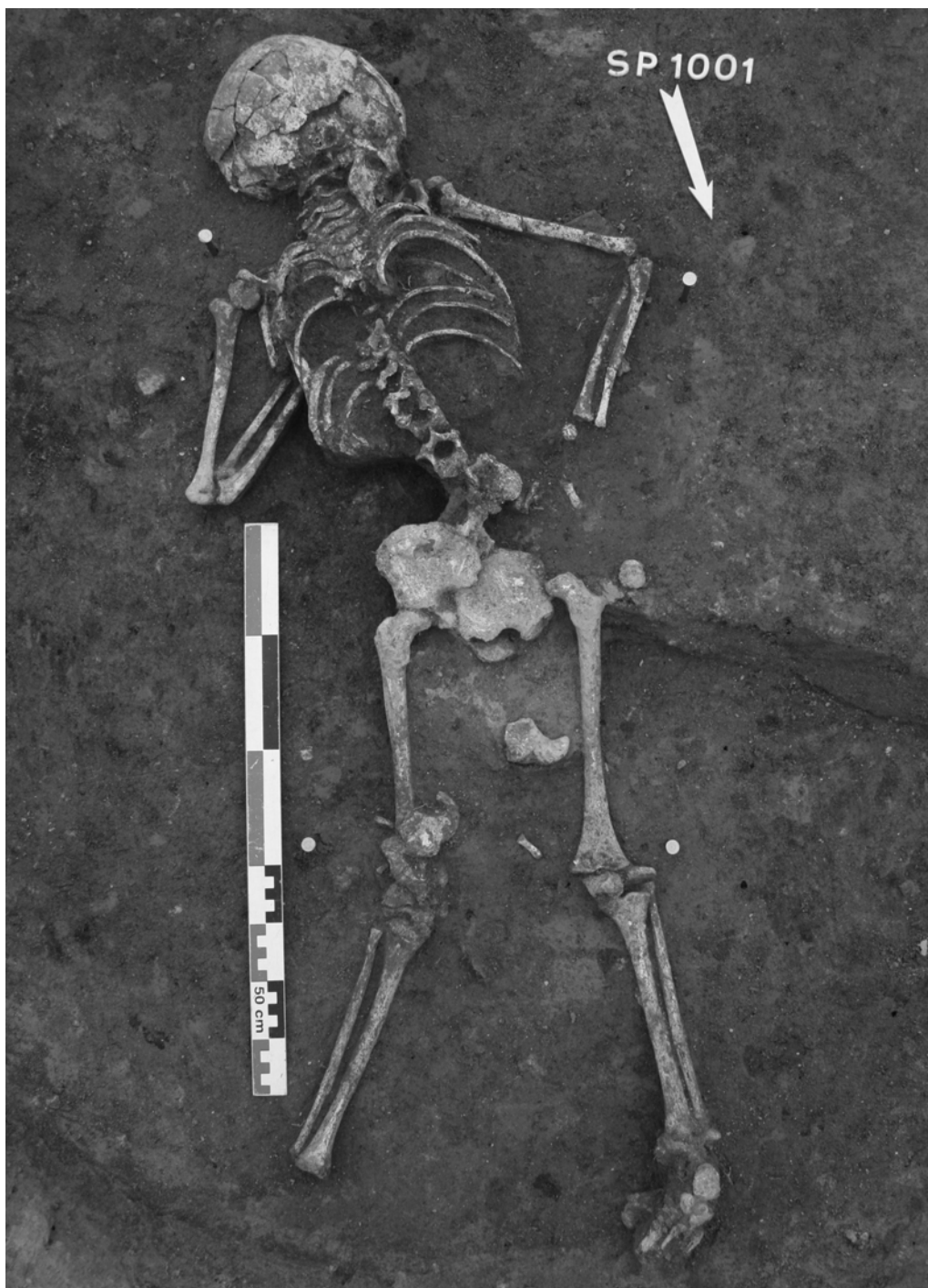


Fig. 7.5: Non-adult buried on their front, pit 1001, Gougenheim (photo: G. Alix, Institut National de Recherches Archéologiques Préventives)

random position) burials found in the cultures of Münchshöfen, Michelsberg, Munzingen, Baalberge and La Roberte. In this paper, we expand the interpretive framework to include also the other categories of unconventional burials. This further development of the theoretical framework was prompted by the discovery at Colmar of a very intriguing burial of an individual lying on its stomach, associated with 56 copper beads (Lefranc *et al.* 2012). More recently still, an excavation at the site of Gougenheim, Basse-Alsace, produced more data on this type of burial, which demonstrated that rather than being rare they appear in relative frequency on Michelsberg settlement sites (Lefranc *et al.* 2015).

Demography

With 35 complete individuals in single and multiple inhumations in unconventional positions (categories 2 and 3) dating to the period between c.4050 and 3800 cal BC (MKII–IV), the Michelsberg culture offers a relatively rich corpus through which to explore this phenomenon. 25 are from individual burials, while the remaining 10 individuals were found in five multiple burials. The majority of the studied burials come from recent excavations and have benefitted from forensic anthropological investigation of the human remains, offering insight into who was selected to receive this rite. Adults constitute the greater part of the assemblage (71%) and it should be noted that, although the number of sexed burials is unrepresentative, women represent 72% (n=26) of those burials for which a sex could be determined, which could reflect a real trend in selection of who received this rite.

The selection of individuals for deposition in an unconventional fashion alongside a ‘principal death’ (category 5) provides a contrasting picture. The well-dated multiple and asymmetrical burials consist of 10 juveniles and 1 adult female. Conclusions are tentative due to the low number of individuals, which have been found buried in unconventional body positions to date (in total 46 burials, including the 35 listed above). However, these data suggest the possibility of two separate systems of selection being practised, leading to the two demographic profiles found. The six asymmetrical Munzingen burials in the Mulhouse region give identical results, as 71% of the accompanying burials are sub-adults (29% are adults).

Only one burial in an unconventional position is found with associated grave goods. At the site of Colmar ‘Aérodrome’ one individual, placed on their stomach, was accompanied by two ‘necklaces’ composed on 56 copper beads representing more than 500 grams of metal. This burial has no parallels in the Michelsberg in terms of both body position and the composition of grave goods.

Treatment of the body

The majority of bodies found in unconventional positions are deposited without visible modifications to the skeleton. Certain individuals, however, have traces of lesions or cut marks. For the Michelsberg culture, two individuals in unconventional positions (without taking into account the ‘funerary accompaniment’ burials of category 5) present cranial injuries that were probably responsible for their deaths: Rosheim ‘Leimen’ (pit 171) and Gougenheim (pit 1076, individual 2). At Rosheim ‘Leimen’ the burial contains an immature

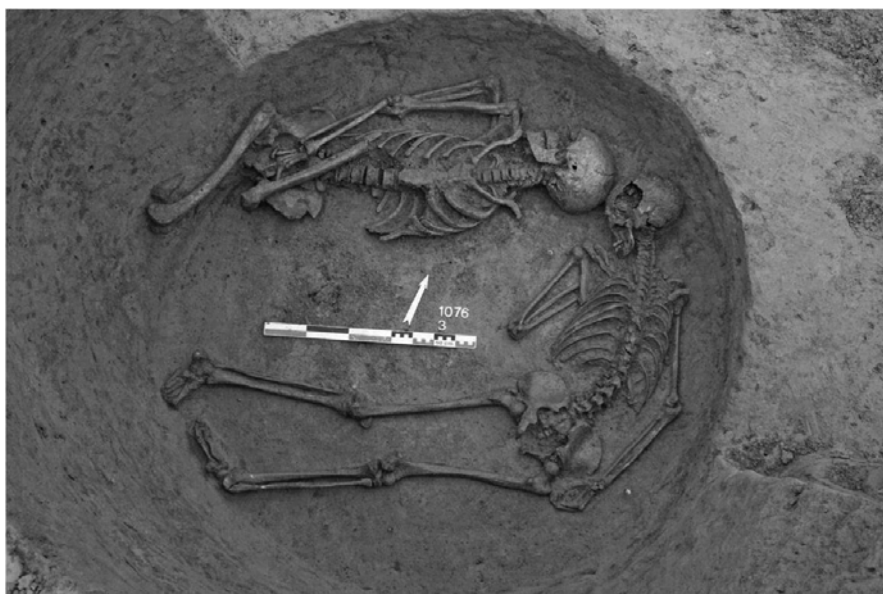


Fig. 7.6: Two individuals (a male and a non-adult) in irregular positions, deposited on the base of pit 1076, Gougenheim (see also Fig. 7.3; photo: G. Alix, Institut National de Recherches Archéologiques Préventives).

individual interred with an adult female placed in an unconventional position, and at Gougenheim, an immature burial was lying in contact with the remains of an incomplete adult male skeleton (1076–1). This male from Gougenheim has several fractures and disarticulated bones. The left femur and right tibia both demonstrate traces of fresh breaks associated with burn marks. The distal end of the femur, broken at the diaphysis, is missing and the bone is burnt at the break. A fragment of the right tibia and the radius and ulna from the left forearm have received the same treatment. The left arm, found under the thorax, had been torn from the corpse while still fleshed, and deposited without the hand before the rest of the body was placed in the burial. This male and the associated immature individual (Fig. 7.6) were placed at the base of a pit, which was later to receive the burials of two adult females in unconventional positions, placed in the upper fill (Fig. 7.3).

Other individuals found in unconventional positions were also victims of violent acts. An additional example from Gougenheim is the immature individual from pit 2016, who was subjected to a series of modifications while the body was still fleshed, as indicated by the preservation of the right hand and both feet in anatomical connection (Fig. 7.7). The upper limbs were separated from the torso and the head was found in connection with the first three cervical vertebrae only, a configuration highly suggestive of a beheading. Finally, the left arm is absent. Also from Gougenheim is a case of an adult female (from pit 2160) whose tibias had been broken. At Marlenheim an individual from pit 109 had a freshly fractured right humerus when he or she was buried (Lefranc *et al.* 2011a). The smaller Munzingen corpus includes an adult female who was very likely beheaded before her burial in at pit at Geispolsheim 'Forlen' (Fig. 7.8). The irregular position of the skull



Fig. 7.7: Segmented body of a non-adult individual, pit 2016, Gougenheim (photo: G. Alix, Institut National de Recherches Archéologiques Préventives).



Fig. 7.8: Female, probably decapitated, deposited in a pit at Geispolsheim, Alsace France (Photo: D. Billoin, Institut National de Recherches Archéologiques Préventives)

and lower cervical vertebra, which were found beneath the left scapula, can be interpreted as the result of a beheading with the deposition of the skull in the pit before the rest of the body (Lefranc *et al.* 2011b).

INTERPRETING MICHELBERG AND MUNZINGEN FUNERARY PRACTICES

We now turn to explore possible explanations for the patterns described above, presenting competing hypotheses. Three concepts are put forward: ‘peripheral accompaniment’, war, and finally sacrifice, which is our preferred interpretation.

Peripheral accompaniment

No material index can determine the meaning behind placing the deceased’s body in an irregular position. The ‘funerary accompaniment’ thesis, characterised by the combination of unconventional and conventional burial, requires that the unconventionally placed body or bodies are identified as ‘accompanying’ as a first interpretative step (Boulestin 2008). This hypothesis may be applicable also for the ‘peripheral accompaniment’ burials, where the accompanying bodies are interred outside of the principal burial pit. Ethnographically, such accompanying bodies may be placed, for example, in another pit or in water (Testart 2004). However, there is little archaeological evidence to support this hypothesis for the later Neolithic; no conventional and irregular burials show spatial proximity in a closely-defined space – as is seen, for example, in the case of the ‘Roy Mata’ burial at Retoka, Vanuata (Garanger 1972). In comparison, no such organisation could be detected among the 36 pits with human remains that were excavated across four hectares at Gougenheim (Lefranc *et al.* 2015). Irregular bodies never appear in close proximity with conventional burials.

Another caveat for the ‘peripheral accompaniment’ hypothesis is the existence of mutilated individuals, sometimes interred alongside other individuals placed in irregular body positions, which does not correspond to this phenomenon in the anthropological literature. Sometimes the ‘principal death’ is merely accompanied by the severed heads of slaves (Memel-Fôté 2007), but extreme violence, dismemberment or exposure to fire are never mentioned. Finally, we can note the burial at Colmar, where an isolated individual placed in an irregular position received rare and probably highly valued copper beads (Lefranc *et al.* 2012). It is challenging to follow the ‘peripheral accompaniment’ hypothesis when these highly valued objects were buried not with the principal dead, but with a possible slave.

War

An alternative hypothesis that sometimes explains the presence of irregular or random body positions in burials is death during war. This interpretation has often been evoked to explain mass or multiple burials of individuals who had suffered peri-mortem acts of violence, such as torture or mutilation of the corpse. As many historic and recent examples of this practice exist, it is difficult to argue against and, as a result, is a common interpretation.

Although alternative interpretations can be presented, the Mesolithic skull nests from south-west Germany are strongly evocative of the funeral rites of war or ‘head hunting’ trophies (Jeunesse 2012a). For the Neolithic, acts of war are becoming more visible, particularly at the end of the *Linearbandkeramik* (LBK) with the mass burials at Talheim,

Asparn/Schletz and, more recently, at Schöneck-Kilianstädten. At the latter site, recent analysis has demonstrated that most individuals had been killed violently and were probably deposited in a ditch segment after their legs had been systematically broken (Meyer *et al.* 2015). A note of caution, however, should be considered; as the site of Herxheim illustrates, mass killings may occur in the context of ritual and may not always be explained as acts of war (Boulestin *et al.* 2009). Despite the example of Herxheim, the mass burial at Schöneck-Kilianstädten appears to have arisen from a particularly violent event associated with a very short horizon limited to the very end of this culture.

The question thus posed for the later Neolithic is whether the evidence arising from the circular pit burials or the human remains discovered in association with ditched enclosures are indicative of war (Wahl 2008)? This was one of the possibilities considered for site of Bergheim (Chenal *et al.* 2015), drawing on parallels between treatment of human remains at this site and the practice of dismembering war victims and taking body parts as trophies attested among populations in California during the ‘archaic period’ (Andruschko *et al.* 2010). The pit at Bergheim produced two burials of males who had been mutilated and two females buried in irregular positions, seven left arms that had been severed while the bodies were still fleshed, the remains of a neonate, and two hares (Chenal *et al.* 2015). The richest burials have been discovered in Alsace, but these are also the oldest burials, as radiocarbon dating suggests that they took place before the arrival of the Michelsberg. The earliest manifestation of burial in a circular pit of the Southern Rhine valley is an adult placed in an irregular position at the site of Vendenheim, which belongs to the end of the Middle Neolithic (Lefranc & Chenal 2016).

As discussed above, at the site of Gougenheim the two individuals had been mutilated, with one missing their left arm (pit 2016, Fig. 7.6) and the other, their left hand (pit 1076, Fig. 7.7). These practices could be interpreted as representing violence in war and possibly the removal of trophies from captives. However, it is rather more difficult to justify interpreting all individuals found in irregular or random positions, either individually or in multiple burials, recovered between Bavaria and Upper Alsace over a period spanning nearly half a millennium, as victims of war. In contrast, the long duration of this phenomenon, its wide geographical distribution, and its gradual diffusion from Bavaria to the Rhône valley through Basse- and Haute-Alsace, could suggest that such practices were part of a symbolic system of funerary rites rather than the result of random acts of warlike violence. These ‘violent’ burial rites could have first developed as part of the symbolism of the Münchshofen culture (*e.g.* Schmotz & Staskiewicz 2008), before being exported to the Rhine valley, the middle Rhône valley, Bohemia, Moravia, and the Carpathian Basin.

Sacrifice

Here, we would like to examine the alternative hypothesis that these burials were the remains of human sacrifice. Although this idea has been criticised in the past (*e.g.* Padel 1995; Hassler 1992), two main reasons make this suggestion a viable alternative interpretation of the burial data. First, the practice of human sacrifice has been widely prevalent in agrarian societies, whether they are state societies, where sacrifice is the prerogative of royals, or lineages societies (Graulich 2005; Testart 2006). The presence of human sacrifice in the Neolithic is therefore not improbable. Second, populations that practice ‘funerary

accompaniment', such as in Africa, the Americas or elsewhere, willingly sacrifice humans at certain occasions. However, following Testart (2005), it is important to separate sacrifice from 'funerary accompaniment' *per se*, a distinction very clearly proposed by Basden (1921, 122) in relation to the Igbo, Nigeria: 'It is essential to distinguish between mere execution in the course of funeral rites and the custom of human sacrifice. The latter appears to be always of an atoning character, whilst the victims at a burial are put to death solely to provide attendants spirits to accompany the chief into the great beyond.'

The suggestion that individuals buried in irregular body positions were the victims of either sacrifice or warfare are not mutually exclusive, as illustrated by the 'Flower War' (Xochiyaoyotl) in Mesoamerica (Duverger 1979). It is not our intention to explore the issue of the recruitment of sacrificial victims, in America or elsewhere, but to emphasise that sometimes there is a close connection between war and sacrifice.

If the practice of 'funerary accompaniment' is indeed present in the Munzingen and Michelsberg cultures, human sacrifice *stricto-sensu* has a strong chance of forming part of the ritual grammar of these populations. In this paper, we have not analysed in detail the funerary data from the eastern (Baalberge, Salzmünde, Boleraz and Baden cultures) and southern (Chasséen and La Roberte cultures) regions where the practice of burial in circular pits is also found. However, a number of characteristics identified above for the central regions have been identified to the east and south, and the 'sacrifice' hypothesis has already been proposed, notably by Točík (1979) in the case of Nitriánsky Hrádok, Slovakia, and more recently by Horwáth (2010) and Horwáth and Köhler (2012) at the Baden culture site at Balatonőszöd Temetői-dűlő, Hungary.

Building on the seminal work of Hubert and Mauss in 1899 (1968) and Loisy (1920), extensive research has been carried out on sacrifice, which is impossible to summarise in its entirety here. Some studies have dealt with human sacrifice (Davies 1981; Albert & Midant-Reynes 2005; Albert *et al.* 2005; Bremmer 2007; Mbogoni 2013), sometimes sacrifice has even been argued to be a founding principle of human societies (Freud 1913; Hocart 1954; Girard 1972), but there is no authoritative recent synthesis on this subject. However, the purpose here is to highlight some of the ways in which the post-sacrificial body was treated, rather than discuss human sacrifice in general. In interpreting sacrifices from historical periods, written sources have been favoured rather than the archaeological remains. Our bibliographical review, first directed by the work of Testart (2005), was limited to classic studies, such as those by Frazer, Linton, Roth, Basden, Rattray, Boas, Graham and Memel-Fotê, as well as the travelogues of Cook and Anderson (1820), Boissragon (1897) and Burton (1863). Examples from Central America are abundant and we draw particularly on Sahagun (1555) and De Landa (2012 [1566]). The examples have been chosen from primarily non- or pre-state societies from all continents, including the Khonds of Odisha (formerly Orissa, Frazer 1922), the lineage societies of the Igbo and Odjukura from the forests of the Ivory Coast (Basden 1921; Memel-Fotê 2007), Northwest Coast, Canada (Boas 1966), New Guinea (Brutti 2011; Poole 1983), Tahiti (Cook & Anderson 1820), the Marquesas Islands (Radiguet 1882), north USA (Linton 1926) and the Dayaks, Borneo (Roth 1896). The documentary research also included some West African kingdoms, where human sacrifice is particularly well documented (Rattray 1927; Graham 1965; Campion-Vincent 1967; Terray 1994), as well as the Aztec and ancient Mayan societies (Graulich 2005; De Landa 2012 [1566]).

The use of the victim's body does not fundamentally vary between examples from lineage and state societies. The main difference we identified in the reviewed literature was the number of individuals sacrificed. In the Kingdom of Abomey 30–80 victims were put to death during annual festivals, a number which could reach five hundred during large festivals (Campion-Vincent 1967), or the dizzying number of prisoners sacrificed at Aztec ceremonies, which may have reached hundreds of thousands of sacrificial victims a year (Graulich 2005). The identity of victims can be very varied and while only sketched in outline here, there are some observations that can be made. Among non-state societies, where the status of the victim is known, he or she is usually a slave (Roth 1896; Frazer 1922; Boas 1966), sometimes purchased for the occasion (Memel-Foté 2007) or an individual taken from an enemy neighbouring group (Radiguet 1882; Linton 1926; Poole 1983; Brutti 2011). As noted by Frazer (1922) for the Khonds of Odisha in India, the sacrificial victim or 'Meriah', was only deemed suitable if purchased from the family of, or otherwise related to, a previous victim. The origins of the slaves killed in lineage societies are rarely specified, but some, such as Basden (1921), noted that they were enslaved prisoners of war. The involvement of prisoners of war in the sacrificial rites, and at funerals, also appears to characterise the victims of sacrifice in state societies. Their presence, sometimes in huge numbers, is well established for the Dahomey and Ashanti Kingdoms (in modern-day Ghana), and during the Aztec 'Flower War' in Mesoamerica. Finally, there is also the suggestion that in the Kingdom of Ashanti, criminals were condemned to death and confined to 'villages' of sacrificial victims until they were killed (Terray 1994).

Treatment of the body after death

Ethnographic examples of structured or formal burial deposits of individuals who have been sacrificed and who show signs of having received ritual or ceremonial rites (intended as devotion to or to satisfy a supernatural entity) are rare. Among non-state societies, it is possible to cite the foundational deposits in the longhouses of the Northwest Coast communities, Canada (Boas 1966) and the Batak, Sumatra (Graulich 2005), or the Dayaks, Borneo, whose sacrificial victims were buried (mutilated and sometimes burnt) under the central posts of new houses (Roth 1896).

The Khonds are said to have buried body parts to promote plant growth, a practice which brought to a close the sacrifice of the 'Meriah' (Frazer 1922). The same practice characterises the Pawnee 'Morning Star' sacrifice ceremony, where pieces of victims were buried in fields (Linton 1926). In New Guinea, among the Papous Oksapmin, the blood of a young father sacrificed during the Yuan-täl rite was smothered on the tubers and the dismembered remains distributed between different clans, who used the remains in initiation rites and then buried them (Brutti 2011).

Apart from these kinds of foundational deposits and fertility rites, burial of the whole or part of the body of the victim is rarely mentioned. We found only three cases where the ethnographic source had recorded in detail the treatment of the victim's corpse, of which only Cook's description of Oro sacrifice (Tahiti) from 1777 related to a non-state society. The sacrifice took place in front of a Marae temple: 'The dead body was now carried to the most conspicuous part of the Morai (...). The priests having again seated themselves round the corpse, renewed their prayers *while some of their assistants dug a hole about the depth*

of two feet deep, into which they threw in the victim and covered it over with stones and earth' (Cook & Anderson 1820, 543, added emphasis). This interment of sacrificial victims at Marae temples has been confirmed by archaeology (Conte 1996). The rationale for burial within the temple enclosure is not clear, though according to some accounts (e.g. Morrison 1792 [1981]), burial in this place was taboo (or 'tapu') and hence reserved for certain categories of the dead, such as victims of sacrifices or individuals killed at war.

The other ethnographic accounts of post-sacrifice burial that we found relate to state societies. They are the practice recorded by De Landa in the Mayan kingdoms of Yucatán and by Boisragon in his account of the punitive British expedition against Edo (kingdom of Benin, Nigeria) in 1897. In the *Relación de las cosas de Yucatan*, written around 1566, De Landa (*trans.* Gates 2012, XVIII) dedicates a chapter to the sacrificial rites, where he describes the bodies of some victims being buried within the walls of temples. However, we know very little of the reasons why some victims were chosen to receive these rites. De Landa (2012 [1566]) writes clearly about the key moment of sacrifice and only mentions in passing that subsequent burial was possible as well as consumption of the corpse. In the town of Edo, Boisragon describes sacrifices taking place in courtyards, surrounded by porticos that housed the altars of the kings. In the corners of these courtyards, were 'some huge pits, 40 to 50 feet deep, [that] were found filled with human bodies' (Boisragon 1897, 187). This too can be seen as evidence for the burial of sacrificial victims in sacred spaces, but the description of the 'huge dumps' (12–15m in depth) should be read sceptically, as it is likely that the text was influenced by a desire to justify British military intervention. The writings of De Landa (2012) and Boisragon (1897), as well as those of Cook, demonstrate that the phenomenon of burying sacrificial victims in sacred places is known, though admittedly rare.

Our final example of burial after sacrificial rites in state societies is from the Thai kingdom, where victims of sacrifices as part of foundational rituals for new buildings or monuments were thought to turn into protective spirits. The victims were buried under the 'foundational pillars' of the *Lak Mueang*, sacred 'city' pillars (Terwiel 1978).

To these examples we can also add the 'cemeteries' of individuals buried in irregular positions (for their context), some of whom had been mutilated, that have been discovered near temples in the Mayan civilization in El Salvador (Fowler 1984), by the Aztecs in Mexico (Graulich 2005), and among the Nasca, Moche, and Inca groups in Peru (Fleming 1987; Eeckhout & Owens 2008). For example, at the Aztec site of Tenenepanco on the slopes of Popocateptl at 4000m altitude, Hamy (1884, cited in Graulich 2005) uncovered a series of pits containing the bodies of children, 'thrown pell-mell into the pits, sometimes alone and sometimes in groups, in all positions and at all depths.' Statues of Tlaloc, the god of rain, were among the grave goods accompanying these burials. Child sacrifice in high places to this god is attested by Sahagun (Hamy 1884), who states that they were 'sacrificed in many places on the mountaintops, snatching their heart to honour the gods of water to get heavy rain.' Here too, the archaeological evidence and historical chronicles complement each other.

The body treatment that is most frequently encountered across all cultural groups (where the corpse was not eaten), whatever the type of society considered, is simple abandonment. This is frequently the case in examples from west Africa, where after the performance of the simple killing ritual (Memel-Fotê 2007) or the offering of the blood (Graham 1965; Terray 1994), the body of the victim was considered as waste, deposited in the forest

(Basden 1921, 123; Rattray 1927, 143; Memel-Foté 2007, 751) or on the outskirts of the town (Burton 1862; Boisragon 1897). Bodies are sometimes deposited in dedicated spaces. The Igbo placed victims in the *Ajan-Anfia* (the ‘bad-bush’; Basden 1921, 123), and the Ashanti placed them in the Bom (‘in the Hollow’; Rattray 1927, 143).

If we accept the hypothesis of sacrifice and attempt to interpret the Michelsberg and Munzingen deposits following the examples outlined above, there are a number of interpretations that can be ruled out. The possible Michelsberg victims were not simply abandoned – as seems to be the rule for many victims in the anthropological examples. We cannot evoke further arguments about whether these burials were ‘foundational deposits’ without further investigation of the evidence, as these are never strictly associated with monuments and as postholes are rarely preserved in the 4th millennium cal BC in this region. However, we can point to the post-sacrificial interments found at the Marae in Polynesia and at Mayan temples of Yucatán. This interpretation is perhaps strengthened by other structured depositional practices taking place in circular pits alongside human burials, including whole animals (domestic and wild) and complete pots, possibly used in drinking rites (Lefranc 2015). It remains difficult to assess whether these deposits were intentional offerings, or rather the remainders of ritual activities, thus becoming sacred objects or material and possibly invested with supernatural powers, which could not be got rid of carelessly. The recovery of complete vessels, beakers, and bottles in these pits (Fig. 7.9) suggests that the burial of ritual equipment was practised in the Michelsberg Neolithic, as it was in the Bronze Age (Schauer 1996; David-Elbiali *et al.* 2014), the Iron Age (Poux 2000; 2004; Denti 2009) and Classical Greece (Burkert 2011). The notion of ‘rebutis d’offrande et de sacrifice’ (remains of offerings and sacrifice; Burkert 2011) or the ‘material remains’ of rituals could account for the irregular human burials, whose ambiguous status lies somewhere between simple interment and the structured deposition of sacred objects. It is this last hypothesis that could help explain the Colmar burial with the copper beads; a set of objects and an individual imbued with social significance and supernatural meaning deposited after the ritual that they were involved in was completed. The same interpretation could be applied to a number of further deposits. In the Rhine valley region under discussion here, we can point to a recently recovered feature from the site of Obernai, dating to the BORS-Michelsberg horizon, which contained two young children in irregular positions buried at the same time as remains of several canines (as yet unpublished), as well as the extraordinary burials of mutilated individuals at Bergheim (discussed above).

Excess violence

The peri-mortem violence, including severed arms and broken legs, is most frequently interpreted, perhaps correctly, as acts of torture or insults to enemy corpses after conflict. However, violence is not absent from human sacrifice and can on occasion be extreme. Several accounts, all based on non-state societies, illustrate that the purpose of sacrifice is not solely to take and offer a life (as in sacrificial offerings or oblation), but also to exhibit the death itself, sometimes with an explosion of violence. This ‘surfeit of violence’ (Scubla 2005), perhaps best illustrated by Frazer’s (1922) account of the ‘Meriah’ sacrifice practiced by the Khonds of Odisha (India), where the arms and legs of the victim were broken to



Fig. 7.9. Assemblage of mostly complete bottles and goblets from Obernai, Alsace, France (Photo: S. Griselin, Institut National de Recherches Archéologiques Préventives)

prevent movement. When the victim is not strangled or slowly roasted over a fire, the ceremony is like butchery, with the sacrificial victim being torn alive (Frazer 1922).

During the fertility rites of the Oksapmin New Guinea, the legs and arms of the victim were broken, the individual was then tied to a tree before being dismembered (Brutti 2011). In the course of the ‘Great Pandanus’ ceremony of the neighbouring Bimin group, two Oksapmin victims, a man and a woman, were extensively tortured before being put to death and consumed (Poole 1983; Reeves Sanday 1986). The excess of violence is also illustrated by the Ikpu Alu-sacrifice ceremony of the Igbo areas of Nigeria, described by Basden (1921, 233) as akin to a lynching, with the victim beaten to death or brutally burnt, as well as the well-known accounts of Iroquian torture, which several authors have stressed had a sacrificial element (*e.g.* Knowles 1940; Baudéz 2012). These examples, among the few cases where human sacrifice is described in detail, demonstrate that beyond killing, premeditated violence was part of the ritual. Following the analysis by Scubla (2005), who drew on the work of René Girard, theatrical and exaggerated violence is a deliberate and constant factor of sacrificial rites that cannot be reduced to oblation, and also applies to the sacrifice of animals. For example, the Ainu, Hokkaido (Japan) sacrificed bears which

were tormented by the crowd before being shot, or the Merina, Madagascar, whose sacrificial cattle were ‘abused with sophisticated cruelty that was in no way accidental’ (Scubla 2005, 148).

The final question remaining is the use of dismembered bodies and conserved body parts during rituals and before burial. The use of body parts from victims as ritual tools – or kept as trophies from battles, a practice illustrated by the sacrificial skulls displayed by the Aztecs on the Tzompatali (a wooden rack-like structure, Graulich 2005), or the Marae, Polynesia (Cook & Anderson 1820) and the altars of the Yoruba kings (Roth 1903) – is not well documented, but as the example of the Oksapmin illustrates, the practice could have been frequent. Mutilations and dismemberments are also often suggested for archaeological contexts and interpreted as evidence for sacrifice (Fowler 1984; Fleming 1987; Graulich 2005; Tiesler 2007; Goepfert 2010). Therefore, a close connection between war/fighting and sacrifice should not be ruled out, and, in advance of further discoveries from Alsace, both may yet play a role in explaining the funerary practices described here.

CONCLUSION

We do not claim to have definitively answered the question posed in the title of this contribution, rather we wish to stress that none of the accounts of human sacrifice encountered in the ethnographic literature leads us to seriously doubt the ‘Neolithic sacrifice’ hypothesis. Although the burial of victims is rare, it is attested in ceremonial contexts and shows evidence of the excess violence through mutilated bodies, which appears relatively common in the literature that recorded sacrificial context. Sacrifice, as recorded by Frazer, Linton, Basden, Poole, and Brutti, fits the dataset fairly well in three ways: the excess of violence, the practice of dismemberment and the final treatment of the body as waste (possibly after ritual use of certain body parts).

At this stage it is difficult to move beyond hypothesis, but we hope to have demonstrated here that the practice of sacrifice has validity and should encourage us to think again about the disarticulated human remains frequently found at Michelsberg enclosures (there are no Munzingen enclosures with human remains), but that have not been carefully studied. The subject surely warrants more substantial research and debate. The recent work of physical anthropologists has found a very high frequency of traces of violence on the bodies deposited in the enclosures of the Neckar valley (*e.g.* at Heilbronn-Klingenbergr, Neckarsulm-Obereisesheim and Ilsfeld), the only assemblages that have received extensive study to date (Wahl 2008). Here, again, war is evoked as an explanation, but as Jeunesse (2012b) has already pointed out this interpretation does not do justice to the other deposits discovered in these enclosures (complete ceramic vessels and animal carcasses), sometimes deposited with human remains. It is in this context that the suggestion of these deposits being ‘ritual waste’ (Jeunesse 2012b) is particularly powerful, and the interpretation of ritualised violence more fitting with the evidence than war. However, nothing prevents a connection between war and sacrifice, the former often being the main provider of victims in numerous cultures.

Translated by Penny Bickle

NOTE

- 1 The material discussed in this contribution is in large part extracted from the wider reflections of a research group considering the phenomenon of circular pit burials, under the direction of Prof. Christian Jeunesse (University of Strasbourg).

REFERENCES

- Albert, J.-P. and Midant-Reynes, B. (2005) Sacrifices humains et autres mises à mort rituelles: une introduction. In J.-P. Albert and B. Midant-Reynes (eds.) *Le sacrifice humain en Égypte ancienne et ailleurs (Études d'Égyptologie 6)*, 10–19. Paris, Soleb.
- Albert, J.-P., Crubezy, E. and Midant-Reynes, B. (2005) L'archéologie du sacrifice humain: problèmes et hypothèses. In J.-P. Albert and B. Midant-Reynes (eds.) *Le sacrifice humain en Égypte ancienne et ailleurs (Études d'Égyptologie 6)*, 20–33. Paris, Soleb.
- Andrushko, V., Schwitalla, A. and Walker, P. (2010) Trophy-taking and dismemberment as warfare strategies in prehistoric central California. *American Journal of Physical Anthropology* 141, 83–96.
- Basden, G.-T. (1921) *Among the Ibos of Nigeria*. London: Seeley, Service and Co.
- Baudez, C. F. (2012) Le passage de la frontière. *Ateliers d'anthropologie* 37. DOI: 10.4000/ateliers.9198 (accessed 11th November 2016).
- Boas, F. (1966) *Kwakiutl Ethnography*. Chicago, London, University of Chicago.
- Boisragon, A. (1897) *The Benin massacre*. London, Methuen.
- Boulestin, B. (2008) Pourquoi mourir ensemble? A propos des tombes multiples dans le Néolithique français. *Bulletin de la Société Préhistorique Française* 105, 103–30.
- Boulestin, B., Zeeb-Lanz, A., Jeunesse, C., Haack, F., Arbogast, R.-M., Denaire, A. (2009) Mass cannibalism in the Linear Pottery Culture at Herxheim (Palatinate, Germany). *Antiquity* 83, 968–82.
- Bremmer, J. N. (2007) (ed.) *The Strange World of Human Sacrifice. Studies in the History and Anthropology of Religion 1*. Leuven, Peeters Publishers.
- Brutti, L. (2011) *Du cannibalisme au capitalisme. Métamorphose d'un rite sacrificiel mélanésien*. Sarrebruck, Éditions universitaires européennes.
- Burkert, W. (2011) *La religion grecque: à l'époque archaïque et classique* (Trans. P. Bonnechere). Paris, Picard.
- Burton, R. F. (1863) *Wanderings in West Africa, Vol II*. London, Tinsley Brothers.
- Campion-Vincent, V. (1967) L'image du Dahomey dans la presse française (1890–1895): les sacrifices humains. *Cahiers d'Études Africaines* 7, 27–58.
- Chenal, F., Perrin, B., Barrand-Emam, H. and Boulestin B. (2015) A farewell to arms: A deposit of human limbs and bodies at Bergheim, France, c.4000 BC. *Antiquity* 89, 1313–30.
- Conte, E. (1996) Un cas de mémoire tronquée: les sépultures du marae Te Tahata à Tepoto (archipel des Tuamotu). In M. Julien (ed.) *Mémoire de pierre, mémoire d'homme: tradition et archéologie en Océanie: hommage à José Garanger*, 75–98. Paris, La Sorbonne.
- Cook, J. and Anderson, G.-W. (1820) *Voyages round the World*. London, Albion Press.
- David-Elbiali, M., Falquet, C., Nitu, C. and Studer, J. (2014) *Fosses rituelles de l'Âge du bronze au pied du Jura*. Lausanne, Cahiers d'archéologie romande.
- Davies, N. (1981) *Human Sacrifice in History and Today*. New York, Morrow and co.
- Denti, M. (2009) Les dépôts de céramique grecque du VIIe siècle avant J.-C. à l'Incoronata. De la modalité des dépositions à la reconstitution des gestes rituels. In S. Bonnardin, C. Hamon, M. Lauwers and B. Quilliec (eds.) *Du matériel au spirituel. Réalités archéologiques et historiques des 'dépôts' de la Préhistoire à nos jours*, 339–52. Antibes, Editions APDCA.

- De Landa, D. (2012) *Yucatan Before and After the Conquest*. (Trad. W. Gates, 1st edition 1937). New York, Courier Corporation.
- Duverger, C. (1979) *La fleur létale: économie du sacrifice aztèque*. Paris, Seuil.
- Eeckhout, P. and Owens L.-S. (2008) Human sacrifice at Pachacamac. *Latin American Antiquity* 19, 375–98.
- Fleming, S. (1987) Infant sacrifice at Pachacamac. *Peru Archaeology* 40, 64–77.
- Fowler, R. Jr. (1984) Late preclassic mortuary patterns and evidence for human sacrifice at Chalchuapa, El Salvador. *American Antiquity* 49, 603–18.
- Frazer, J.-G. (1922) *The Golden Bough*. New York, Macmillan.
- Freud, S. (1913) *Totem und Tabu: Einige übereinstimmungen im Seelenleben der Wilden und der Neurotiker*. Wien, H. Heller & Cie.
- Garanger, J. (1972) *Archéologie des Nouvelles-Hébrides. Contribution à la connaissance des îles du Centre*. Paris, Musée de l'Homme.
- Girard, R. (1972) *La violence et le sacré*. Paris, Grasset.
- Goepfert, N. (2010) Les seigneurs mochica. Art, mort et sacrifice. *Archéologia* 476, 36–49.
- Graham, J.-D. (1965) The Slave trade, depopulation and human sacrifice in Benin history. *Cahiers d'études africaines* 5, 317–34.
- Graulich, M. (2005) *Le sacrifice humain chez les Aztèques*. Paris, Fayard.
- Hamy, T. (1884) Decades americanae: Mémoires d'archéologie et d'ethnographie américaine. *Revue d'ethnographie* 3, 69–84.
- Hassler, P. (1992) *Menschenopfer bei den Azteken? Eine Quellenkritische Studie*. Bern, Peter Lang.
- Hocart, A. M. (1954) *Social Origins*. London, Watts.
- Horwáth, T. (2010) Transcendent phenomena in the Late Copper Age Boleráz/Baden settlement uncovered at Balatonőszöd-Temetői dűlő: human and animal “depositions,” *Jungsteinsite* www.jungsteinSITE.de (accessed on 11th November 2016).
- Horwáth, T. and Köhler, K. (2012) Life and death: mortuary rituals of the Baden culture at lake Balaton (Transdanubia). *Archäologisches Korrespondenzblatt* 42, 453–72.
- Hubert, H. and Mauss, M. (1968) Essai sur la nature et la fonction du sacrifice. *Année sociologique*, 2 (1899). In M. Mauss, *Œuvres* 1, 193–307. Paris, Editions de Minuit.
- Jeunesse, C. (2010) Les sépultures en fosses circulaires de l'horizon 4500–3500: contribution à l'étude comparée des systèmes funéraires du Néolithique européen. In L. Barry and B. Boulestin (eds.) *Morts anormaux et sépultures bizarres, Les dépôts humains en fosses circulaires ou en silos du Néolithique à l'âge du Fer*, 26–46. Dijon, Editions interuniversitaires de Dijon.
- Jeunesse, C. (2011) Enceintes à fossé discontinu et enceintes à pseudo-fossé dans le Néolithique d'Europe centrale et occidentale. In A. Denaire, C. Jeunesse and P. Lefranc (eds.) *Nécropoles et enceintes danubiennes du 5^e millénaire dans le Nord-Est de la France et le Sud-Ouest de l'Allemagne*. 31–71. Strasbourg, Université de Strasbourg.
- Jeunesse, C. (2012a) Ofnet et les dépôts de têtes dans le Mésolithique du sud-ouest de L'Allemagne. In B. Boulestin and D.-H. Gambier (eds.) *Crânes trophées, crânes d'ancêtres et autres pratiques autour de la tête: problèmes d'interprétation en archéologie*, 69–75. Oxford, Archaeopress.
- Jeunesse, C. (2012b) À propos des crânes découverts dans les fossés d'enceinte de la culture de Michelsberg. In B. Boulestin and D.-H. Gambier (eds.) *Crânes trophées, crânes d'ancêtres et autres pratiques autour de la tête: problèmes d'interprétation en archéologie*, 97–105. Oxford, Archaeopress.
- Knowles, N. (1940) The torture of captives by Indians of Eastern North America. *Proceedings of the American Philosophical Society* 82, 151–225.
- Lefranc P. (2015) Un dépôt de céramiques Michelsberg à Obernai 'Parc d'Activités 2 économiques Intercommunal' (Bas-Rhin). *Revue Archéologique de l'Est* 64, 425–38.
- Lefranc P. and Chenal F. (2016) Structures d'habitat et inhumation de la seconde moitié du 5^e millénaire (groupe de Bruebach-Oberbergen) à Vendenheim 'Aux Portes du Kochersberg' (Bas-Rhin). *Cahiers Alsaciens d'Archéologie, d'Art et d'Histoire*, 13–25.

- Lefranc, P., Denaire, A., Chenal, F. and Arbogast, R.-M. (2010) Les inhumations et les dépôts d'animaux en fosses circulaires du Néolithique récent du sud de la plaine du Rhin supérieur. *Gallia Préhistoire* 52, 61–116.
- Lefranc, P., Alix, G. and Arbogast, R.-M. (2011a) Inhumations et dépôts du Néolithique récent à Marlenheim 'In der Hofstatt' (Bas-Rhin). *Cahiers Alsaciens d'Archéologie d'Art et d'Histoire* 54, 29–46.
- Lefranc, P., Denaire, A., Boës, E., Arbogast, R.-M. and Billoin, D. (2011b) L'habitat Néolithique récent de Geispolsheim 'Forlen' (Bas-Rhin). Contribution à la périodisation de la culture de Munzingen et à l'étude de ses relations avec les cultures du plateau suisse et du lac de Constance. *Revue Archéologique de l'Est* 60, 45–82.
- Lefranc, P., Arbogast, R. M., Chenal, F., Hildbrand, E., Merkl, M., Strahm, C., van Willigen, S. and Wörle, M. (2012) Inhumations, dépôts d'animaux et perles en cuivre du iv^e millénaire sur le site Néolithique récent de Colmar 'Aérodrome' (Haut-Rhin). *Bulletin de la Société Préhistorique Française* 109, 689–730.
- Lefranc, P., Réveillas, H. and Thomas, Y. (2015) Les pratiques mortuaires du Néolithique récent en Alsace: l'exemple du site de Gougenheim (France, Bas-Rhin). In L. Rocha, P. Bueno-Ramirez and G. Branco (eds.) *Death as Archaeology of Transition: Thoughts and Materials*, 131–44. Oxford, Archaeopress.
- Lefranc, P., Denaire, A. and Jeunesse, C. (2017) Human remains of the 4th millennium BC in the south of the Upper-Rhine valley. *Tagungen des Landesmuseums für Vorgeschichte Halle* 16, 521–31.
- Lichardus, J. (1986) Le rituel funéraire de la culture de Michelsberg dans la région du Rhin supérieur et moyen. In J.-P. Demoule and J. Guilaine (eds.) *Le Néolithique de la France, hommage à G. Bailloud*, 343–8. Paris, Picard.
- Linton, R. (1926) The origin of the Skidi-Pawnee sacrifice to the morning star. *American Anthropologist* 28, 457–66.
- Loisy, A. (1920) *Essai historique sur le sacrifice*. Paris, E. Nourry.
- Mbogony, L. (2013) *Human Sacrifice and the Supernatural in African History*. Dar Es Salaam, Mkuki na Nyota Publishers.
- Meixner, D. (2009) Ausnahme oder Regel – zum Phänomen der Münchshöfener Bestattungen. In K. Schmotz (eds.) *Vorträge des 27. Niederbayerischen Archäologentages, Rabden/Westf.* 2009, 91–144.
- Memel-Fotê, H. (2007) *L'esclavage dans les sociétés lignagères de la forêt ivoirienne (xvii^e–xx^e siècle)*. Paris, CERAP/IRD.
- Meyer C., Lohr C., Gronenborn, D. and Alt, K. (2015) The massacre mass grave of Schöneck-Kilianstädten reveals new insights into collective violence in Early Neolithic Central Europe. *Proceedings of the National Academy of Sciences* 112, 11217–22.
- Morrison, J. (1981) *Journal de James Morrison, second maître à bord de la Bounty*. Papeete, Société des études océaniques.
- Nickel, C. (1998) Menschliche Skelettreste aus Michelsberger Fundzusammenhängen. *Bericht der Römisch-Germanischen Kommission* 78, 29–233.
- Padel, F. (1995) *The Sacrifice of Human Being, British Rules and the Khonds of Orissa*. Oxford, Oxford University Press.
- Poole, F. J. P. (1983) Cannibals, tricksters and witches: anthropophagic images among Bimin-Kuskusmin. In P. Brown and D. Tuzin (eds.) *The Ethnography of Cannibalism*, 6–32. Washington, Society for Psychological Anthropology.
- Poux, M. (2000) Espaces votifs, espaces festifs: banquets et rites de libation en contexte de sanctuaires et d'enclos. In J.-L. Brunaux (ed.) *Des enclos, pour quoi faire?* *Revue archéologique de Picardie* 2000, 217–31.
- Radiguet, M. (1882) *Les derniers sauvages. La vie et les mœurs aux îles marquises (1842 à 1859)*. Paris, Calmann Lévy.
- Rattray, R. S. (1927) *Religion and Art in Ashanti*. Oxford, Clarendon Press.

- Reeves Sanday, P. (1986) *Divine Hunger: Cannibalism as a Cultural System*. Cambridge, Cambridge University press.
- Roth, H.-L. (1896) *The Natives of Sarawak and British North Borneo* [1968]. London, Truslove & Hanson.; same title, Kuala Lumpur: University of Malaya Press. 2 vols.
- Roth, H.-L. (1903) *Great Benin – Its Customs, Art and Horrors*. Halifax, F. King and sons.
- Schauer, P. (1996) Naturheilige Plätze, Opferstätten, Deponierungsfunde und Symbolgut der jüngeren Bronzezeit Süddeutschlands. In P. Schauer (ed.) *Archäologische Forschungen zum Kultgeschehen in der jüngeren Bronzezeit und frühen Eisenzeit Alteuropas*, 381–416. Regensburg, Bonn, Univ. Verlag Regensburg (*Regensburger Beiträge zur Prähistorischen Archäologie*, 2).
- Schweitzer, J. (1987) Le site Michelsberg de Didenheim. *Cahiers de l'Association pour la Promotion de la Recherche Archéologique en Alsace* 3, 50–87.
- Schmotz, K. and Staskiewicz, A. (2008) Gewalt im Jungneolithikum: Zwei Skelette der Münchshöfener Kultur in Stephansposching, Landkreis Deggendorf, Niederbayern. *Das Archäologische Jahr im Bayern* 2008, 24–6.
- Scubla, L. (2005) 'Ceci n'est pas un meurtre' ou comment le sacrifice contient la violence. In F. Héritier (ed.) *De la violence*, 135–170. Paris, Odile Jacob.
- Terray, E. (1994) Le pouvoir, le sang et la mort dans le royaume asante au xix^e siècle. *Cahiers d'Etudes Africaines* 34, 549–61.
- Terwiel, B. J. (1978) The origin and meaning of the Thai 'City Pillar'. *Journal of the Siam Society* 66, 159–171.
- Testart, A. (2004) *Les morts d'accompagnement. La servitude volontaire I et II*. Paris, Errance.
- Testart, A. (2005) Doit-on parler de 'sacrifice' à propos des morts d'accompagnement? In J.-P. Albert and B. Midant-Reynes (eds.) *Le sacrifice humain en Egypte ancienne et ailleurs (Études d'Égyptologie 6)*, 34–57. Paris, Soleb.
- Testart, A. (2006) *Des dons et des dieux. Anthropologie religieuse et sociologie comparative*. Paris, Errance.
- Tiesler, V. (2007) Funerary or Nonfunerary? New references in identifying Ancient Maya sacrificial and postsacrificial behaviors from human assemblages. In V. Tiesler and A. Cucina (eds.) *New perspectives on human sacrifice and ritual body treatments in ancient Maya Society*, 14–44. New York, Springer.
- Točík, A. (1979) Predstavy cloveka v praveku a vcasnej dobe dejinnej o posmrtnom zivote vo svetle archeologických pramenov z pohrebísk. In M. Kliský (ed.) *Historické korene vzniku náboženstva a jeho prejavy v praveku a vcasnej dobe dejinnej*, 81–7. Nitra.
- Wahl, J. (2008) Profan oder kultisch – bestattet oder entsorgt? Die menschlichen Skelettreste aus den Michelsberger Erdwerken von Heilbronn-Klingenber, Neckarsulm-Oberseesheim und Ilsfeld. In B. Schlenker, U. Stephan and J. Wahl (eds.) *Michelsberger Erdwerke im Raum Heilbronn – Neckarsulm-Oberseesheim Hetzenberg, Ilsfeld Ebene, Lkr. Heilbronn, und Heilbronn-Klingenber Schloßberg, Stadtkr. Heilbronn*, 703–848. Stuttgart, Materialhefte zur Archäologie in Baden-Württemberg 81/3.

Stone bodies between social constructions and ontology: The Copper Age statues-menhirs from the central Alps

Clandia Defrasne

INTRODUCTION

The body is a central topic in the social sciences. Studies in social anthropology and archaeology reveal that the human body, understood as a cultural and political entity (Bailey 2008, 57) that changes over time, is the medium of society and history, and that its study leads to ontological considerations (Harris & Robb 2012, 669). Bodies do not exist outside of the world around them (Robb & Harris 2013). Social anthropology highlights the diversity of attitudes towards the human body and the conception of the person. Various ontologies produce different ways of conceptualizing human or non-human bodies (Boëtsch 2007, 9) and relating them together or to material things, landscapes, ancestors, and so on (Harris & Robb 2012, 676). Indeed, many societies do not have a word for a physical body removed from the totality of human existence (Telban 1998, 62). Sometimes, only body parts (organs, bones, fluids) can be named. In other cases, the body is only perceived through its actions (Telban 1998, 62), or its shape is determined by the way the body is perceived by other beings depending on the relationships with it. In this case, the shape of a body is variable and only exists through other's eyes. The identity of the perceived body depends on the nature of the being looking at it (Taylor & Viveiros de Castro 2006). This highlights a very complex reality that should be kept in mind when archaeological bodies are considered. Moreover, these various body ontologies should not be essentialised or considered as bounded and monolithic. The same human group or individual can shift between various ontological conceptions of the body according to the activity or circumstance (Bailey 2008, 58; Harris & Robb 2012, 670, 676).

This complexity makes it seem difficult to consider the issue of the body in prehistory. It requires us to put aside (as much as possible) some of the modern, western concepts and dichotomies to instead try to recognise clues of how the body was conceived in other social contexts. To that end, representations of the body can be helpful as they frequently convey normative ideas about how the body is conceptualised (Butler 1999; Nanoglou 2008, 2). Representations vary depending on the way the body or corporeality (Bailey 2013) is conceived. A conception of the body as lifeblood passed down through the generations, a mirror of the ancestors, male and female entities composed of substances from the mother and the father, or an appearance accessible to everybody or everything, will lead

to very different representations (Breton *et al.* 2006). Therefore, formal characteristics of human figurations and their archaeological context invite us to make statements about body ontologies and personhood in the past (Bailey 2008, 57; Robb 2008, 166–7).

In this paper I apply this approach to the study of Copper Age statues-menhirs from the central Alps, of which the examples at the UNESCO World Heritage site of Valcamonica in Italy are particularly well known. These statues-menhirs are unusual in the European landscape of stone human effigies, being highly varied and often on unshaped monoliths, unlike the general statue-menhir aesthetic canon (Robb 2009a, 164). Their specificity is mainly attributed to a so-called local art tradition (Robb 2008, 346–7; Robb 2009a, 164), although that explanation should be considered with caution since the majority of rock art in Valtellina and Valcamonica was engraved from the end of the third millennium cal BC and consequently after the production of these statues-menhirs. In this paper I suggest an alternative approach, namely that the statues-menhirs from the central Alps should be considered as gendered stone-bodies in spite of their shape, variability, and abstraction. This is based on systematic study of the published corpus, which reveals some interesting clues about the way the human communities living in the central Alps during the third millennium cal BC conceived the body and ways of being in the world. After setting out the archaeological context, I explore the idea of gendered stone-bodies and show how they are defined by and related to various othernesses from material culture to animal species and territory. I end with a question about how these stone-bodies may have been considered by their makers (Defrasne 2013).¹

THE CULTURAL CONTEXT: 3500–2200 CAL BC

The central Alps is the region between the Ticino and Adige valleys from east to west, and between Liechtenstein and the Po plain from north to south (Fig. 8.1). Historically, culturally, and climatically this region is a crossroads between the eastern and Atlantic Europe and between Mediterranean and temperate zones (Fedele 2003a, 22). In the middle of the fourth millennium cal BC, at the beginning of the Copper Age (according the Italian terminology), or the Late Neolithic (according to the Swiss and French tradition, *e.g.* Heyd 2013), a Europe of jade transformed into a Europe of copper (Pétrequin *et al.* 2012). The Mont Viso quarries, exploited for the production of polished stone axes spread all over the Europe, were abandoned from the 36th century cal BC (Klassen *et al.* 2012, 1304). One crucial change associated with this shift was the adoption of animal traction and copper metallurgy from the east. The ideological consequences of these changes on Copper Age groups are evidenced by, for example, the erection of engraved stelae and statues-menhirs in ceremonial or funerary contexts in many parts of Europe, including the Alps, during the third millennium cal BC. As we shall see, the rock art imagery in alpine areas frequently involves similar motifs, such as images of Remedello-type daggers, which indicates a shared ideology.

Like elsewhere in Europe, ceremonial sites developed considerably in the central Alps during this period (Fedele 2008b, 72). They contained alignments of statues-menhirs, engraved and non-engraved, and probably painted (Fedele & Fossati 2014). In Valcamonica, these sites were sometimes organised around engraved vertical cliffs or collapsed blocks. The engraved imagery is composed of animal figures, copper daggers, polished stone or copper axes, flint or copper halberds, human figures, body ornaments and the ideogram

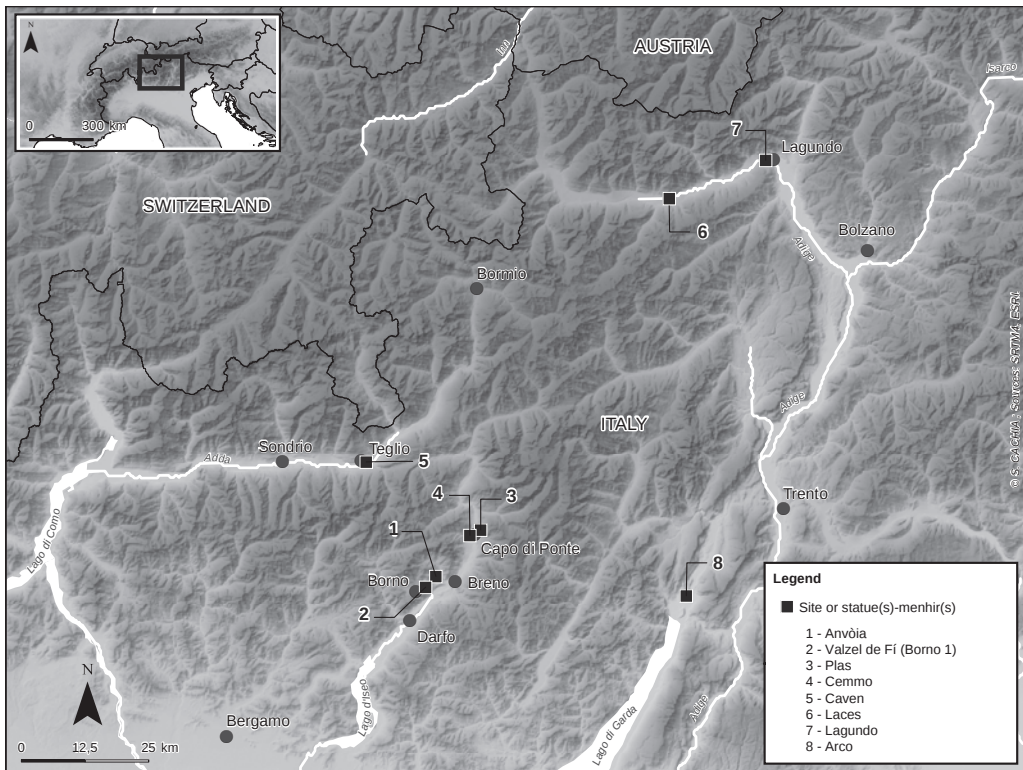


Fig. 8.1: Map of the central Alps and sites mentioned in the chapter.

of animal traction (Fedele 2006b; Defrasne 2013, 82–4; Fedele 2013a). From this imagery we can identify shared ideas across the central Alps, which led Fedele to speak about the camunian province (Fedele 2006b, 47). However, the presence of stylistic variations allows us to distinguish five distinct areas: the high and middle Valcamonica, Valtellina and Val Venosta, the Lozio valley, and the Borno Plateau (Fedele 2006b, 47). The images of Remedello-type daggers and halberds engraved on statues-menhirs are similar to objects discovered in the Copper Age cemeteries of the Po Plain, including the eponymous site, which typologically dates this ideological phenomenon to between 2900 and 2200 cal BC, with three main phases (De Marinis 1994; De Marinis 2013; Fedele 2013b, fig. 1):

- Phase A1 (Copper Age 2, 2900–2500/2400 cal BC), with images of Remedello-type daggers,
- Phase A2 (Copper Age 3, including the Bell Beaker period, 2500/2400–2200 cal BC), with tongue copper daggers and copper Villafranca halberds,
- Phase A3 (end of the Copper Age 3, 2200 cal BC, or beginning of the Bronze Age, 2200–2000 cal BC), with Cemmo 3 stela and Polada dagger of the Borno 5 statue-menhir.

Some discoveries from the Borno Plateau led Fedele (2011; Fedele *et al.* 2014) to suggest a phase 0 in the second half of the fourth millennium cal BC, characterised by ‘topographic’ engravings on erratic boulders. Despite there being twelve known ceremonial sites in the

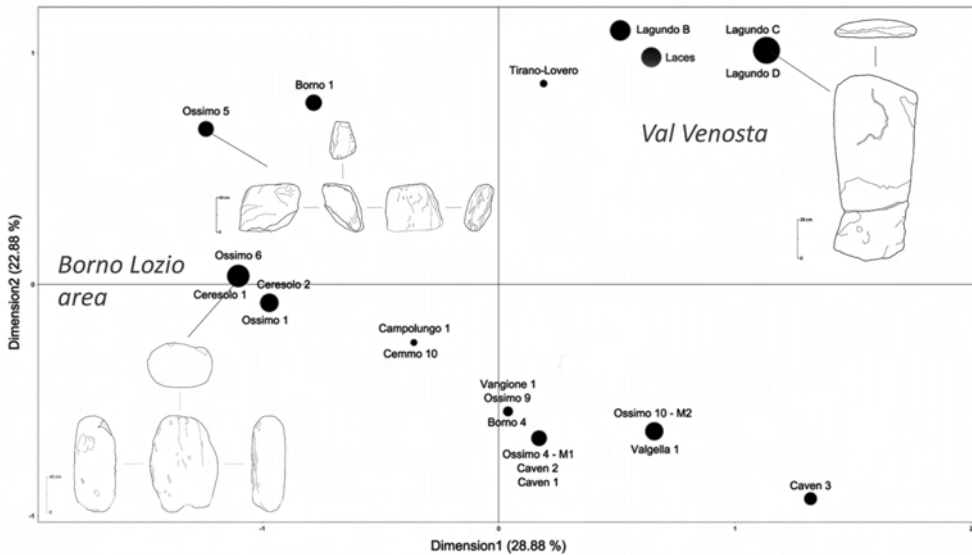


Fig. 8.3: Multiple Correspondence Analysis performed with data concerning the shape of statues-menhirs: factorial diagram of the statistical units. Statues-menhirs from the Borno/Lozio area (left) are opposed to the statues-menhirs from the Val Venosta (right).

settlement activity and erosion of the mountain slopes probably caused the disappearance or masking of material remains (Fedele 1988, 196). Moreover, the morphological, technical and stylistic variability of ceramics in the central Alps and neighbouring valleys, even within single sites, does not aid definitions of social groups. However, connections with the northern regions are apparent (Barfield 2007a, 207–9).

With that context in mind, this study is based on a corpus of 75 statues-menhirs, five collapsed blocks and two vertical rock surfaces bearing 1245 engravings. This imagery is widely published, but here I use a systematic methodology, including both statistical analysis and a new conceptual framework, to suggest new insights.

FROM STONE-BODIES TO INDIVIDUALS

Statues-menhirs from the central Alps are distinctive even though they are part of a European phenomenon stretching from Caucasus to the Iberian Peninsula, from Brittany and the Channel Islands to southern France, Italy and the Mediterranean Islands during the fourth and third millennia cal BC. In the neighbouring regions of the central Alps, particularly in the Lunigiana, Wallis, Aosta, and Adige valleys, the stelae and statues-menhirs have faces, arms or breasts (Mezzena 1997; Corboud 2009; Pedrotti & Tecchiati 2013) and they are very similar to one another. They are engraved with images of objects (copper daggers, axes, pendants and collars, bows and arrows). In contrast, in the central Alps there is a striking variability of the shapes and colours of the statues-menhirs, both across the

region and within single sites. Moreover, anatomical elements are absent, except on one fragment of a statue-menhir from Lagundo, discovered in Val Venosta and reminiscent of the statues-menhirs from Trentino (Fig. 8.5). In the central Alps, the image of the body is consequently indicated mainly by the nature and spatial distribution of engraved images, such as necklaces and belts, across the rock surface. This variability has received little academic attention. To redress this I explore the structure and causes of the variability, initially by considering the geological context.

The rock itself

Sizes and morphologies of the statues-menhirs can be assessed using both a geological sphericity index (*e.g.* Sneed & Folk 1958; Fig. 8.2) and a multidimensional statistical analysis. This approach suggests that the first cause of morphological variability of the statues-menhirs is the immediate geological environment of ceremonial sites. The marble slabs from Val Venosta were extracted from marble outcrops and shaped to achieve a symmetrical object (Fig. 8.3). Their existence depends entirely on human shaping. Imagery such as the belt was engraved around the entire slab, on each surface. The Borno-Lozio area contains a great lithological diversity including many boulders of Permian sandstones and conglomerates of morainic or outwash origin (Fedele 1990, 187). Boulders used for statues-menhirs were chosen in the close environment of the ceremonial sites and mostly erected as they were discovered, without any human shaping other than the subsequent engraving of images. Nevertheless, geology and proximity to the sites were not the only factors influencing the selection of boulders. Their morphological variability due to erosion, as well as their colour and material diversity, were probably also taken into account. We have to keep in mind that the statues-menhirs are three-dimensional objects and not focus solely on surface attributes such as imagery (Robb 2008, 340). The great variability of monolith shape should be considered intentional and as a main characteristic of the statues-menhirs. Their three-dimensionality combined with the lithologic characteristics and results of erosion make each monolith unique. Danesi *et al.* (2014) particularly developed this idea for the Anvòia 14 statue-menhir. On this monolith, pecked figures are violet like the rock core, which makes them stand out from the geological yellow crystalline coating. This chromatic effect, the consequence of a rare geological process, appears deliberate and may have had cognitive and aesthetic values (Danesi *et al.* 2014). Chalcolithic people may have invested some geological features with meaning connected to stone-bodies, which would be unlikely if a dichotomy between nature and culture was relevant for them. This may therefore reflect some aspects of the ontology of these Copper Age societies.

Iconic shapes

Despite this geological influence and variability of shapes, and even if no anatomical parts are engraved or sculpted, some features of the central alpine statues-menhirs suggest a human shape. We could consequently speak of iconicity since these features are reminiscent of the human body. Fedele (2004; 2008b, 69) identified iconic and aniconic monoliths at the Anvòia site. But, besides the human verticality (Cassen 2009, 44) and frontality, the study of 26 statues-menhirs suggested at least three iconic and recurring shapes, which may have evoked the human body. The first one is the presence, in one case, of a natural protuberance

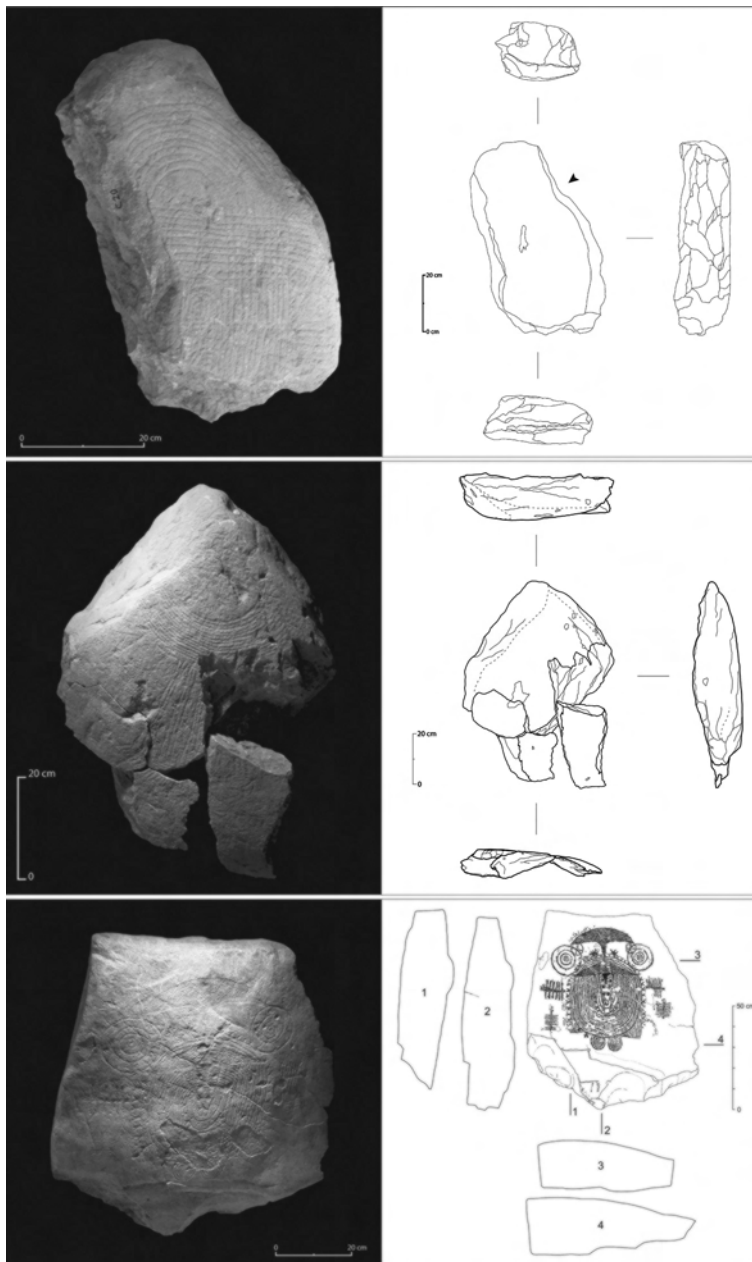


Fig. 8.4: Iconic shapes. Top to bottom: Anvòia C20, Anvòia C22 and Anvòia M1 (Ossimo 4) (Photo and drawings: C. Defrasne, except the drawing of Anvòia M1 by F. G. Fedele).

on top, reminiscent of a human head (Fedele 2008b, 69). Earrings or head coverings are engraved on both sides of this protuberance (Fig. 8.4). Statues-menhirs are not the only stone remains with such an iconic appearance. At the Anvòia site, small stones with human

shapes, sometimes slightly modified to emphasize a geological feature, are brought from other locations to be used in ceremonial activities and left, erected in one case, in some special areas of the site. The fact that the same type of shape characterizes different kinds of remains at Anvòia invites us to consider the statues-menhirs as being part of a broader system of representations. The human body probably had a significant place as a prototype (Gell 1998) in practices related to Copper Age ceremonial sites and shapes reminiscent of bodies were recognised and selected in the environment. Other body-iconic morphologies result from the convergence of two edges either to a tip or to a horizontal edge (Figs. 8.4 & 8.5). The symmetry thus created amplifies the human-like appearance of the statues-menhirs (Fedele 1994, 51). Convergent edges are interpreted as shoulders and the tip as the head. Such an



Fig. 8.5: Contrasted shapes between male and female statues-menhirs. Top: Lagundo A (female) and B (male) (Val Vénosta). Bottom: Caven 1, 2 (male) and 3 (female) (Valtellina).

interpretation is supported by stele Arco 1, in the nearby Trentino (Adige valley), on which eyebrows and a nasal bridge are engraved at the tip of the apex and isolated from the rest of the statue-menhir by a necklace (Pedrotti & Tecchiati 2013, 225). Consequently, in the central Alps, the human body is reduced to a highly schematised and abstract profile: verticality, symmetry and and/or a top protrusion. Some body parts are selected for depiction, other are left out. Attention is primarily paid to the upper part of the body which is engraved with images of artefacts. Therefore, in spite of their abstraction, the statue-menhirs of the central Alps are stone bodies, some being iconic, others aniconic or whose iconicity is now more difficult to identify. These effigies have to be considered as a major source of information about Copper Age individuals and Copper Age society more broadly (Bailey 1994, 321).

New lifestyle centred around the individual

The interpretation of these abstract statues-menhirs as effigies of individuals is reinforced by the archaeological context. In northern Italy, this period is characterised by influence from the eastern Yamnaya-Vučedol; a new lifestyle partly centred on the individual (Harrison & Heyd 2007; Fedele 2013b, 53–8; Defrasne & Fedele 2015, 556–7.). The fusion with collective burials and the ritualization of the territory organised around Borno 1-type sites (with boulders lying on the ground and engraved with ‘topographic’ figures and maybe images of animal traction) led to the transformation of the erratic boulders of the phase 0 previously described into erected anthropomorphic effigies and funerary rituals in various stages (Fedele 2013b). Indeed, the Civate funerary tradition is characterised by burials in rockshelters or caves and, as described by Barfield (2007b, 449), rituals seem to have included varied actions. Bodies could have been placed in structures of the funerary site in order to decay before being partly taken away for cremation, placed in pits or wood structures on the site, translocated on other places (ceremonial sites with statues-menhirs for example) or let in the structures of the sites before being dismantled, burned and covered with stones. This archaeological context appears to be an argument in favour of an interpretation of the engraved monoliths as stone bodies (Defrasne & Fedele 2015, 556).

BODIES, MATERIAL CULTURE AND GENDER

Morphological variability of the statues-menhirs is also determined by social and anthropological factors. Indeed, at first sight, at least two types of statues-menhirs could be identified from the choice of the stone and the images of material culture with which they are engraved. One type is engraved with copper daggers, sheaths, axes, halberds, plough, necklaces. The other type is exclusively engraved with body ornaments. This dualistic pattern is also present in the neighbouring regions. In the Trentino-South Tyrol particularly, some monoliths with compositions of ornaments also display sculpted breasts, suggesting the existence of a gendered distinction between male and female monoliths. Regarding gender, we have to be careful to not oversimplify the ways in which Copper Age people thought about identity, and indeed about what it meant to be human. Indeed, gender is neither static nor homogeneous across time and space, and there may have been many more categories beyond male and female (Bailey 2013, 247–8). Moreover, we have to keep in mind that

genders are not bounded categories or identities but relational ones (Théry 2010; Robb 2012, 97). Nevertheless, the study of the statues-menhirs from the central Alps invite us to make some observations about the way gender was conceived and built.

Gender in stone

In most cases, no sexual attributes are sculpted or engraved onto the statues-menhirs, but gender seems nonetheless expressed through size and shape of the monoliths. 'Female' statues-menhirs measure between 47 and 92cm, which is smaller than the 'male' statues-menhirs that measure between 94 and 267cm. Similar observations have been made for the Trentino (Pedrotti & Steiner 2014, 121). In terms of the shape and processing of the stone, female statues-menhirs in Val Venosta are rounded and ogival-shaped (one bearing a sculpted breast) whereas the male ones are rectangular with flatter and thinner sides. In Valtellina, the male body is suggested by the formation of two lateral edges converging at the top of the statues-menhirs. Female ones are meanwhile formed from small boulders whose top is perfectly round (Fig. 8.5). These contrastive shapes correlated with very different engraved compositions may have been striking when erected side by side in the alignments on the ceremonial sites and seem to illustrate the relational aspect of gender.

Engraved material culture

Body ornaments are an essential part of the male (necklaces, belt, textiles) and female (earrings or head ornaments, necklaces, textiles) engraved imagery and of the material culture of the central Alps. Indeed, the area is part of the Civate funerary tradition, defined by collective burials in rockshelters and caves and the abundance of body ornaments and particularly necklaces as evidenced in the Valtenesi rockshelter (Cornaggia Castiglioni 1971; Barfield 2007a, 296). In this respect, I wish to comment on the two images engraved on male statues-menhirs, too often considered cosmological: the circular figures and the so-called *bandoliera*, which is a simple or double subcircular line with semi-circular and bipartite appendices regularly spaced. As mentioned, it is the archaeological context, the monoliths' overall shape, and engraved material culture that suggest that they represent individuals. However, the shaping and imagery does not include recognisable body parts, which makes interpretation of some elements of the engravings difficult. Circular figures, sometimes with rays, located at the top of male statues-menhirs, and *bandoliera*, engraved on adjacent edges, have been interpreted respectively as solar figures and maps of megalithic enclosures. These interpretations dismiss the nature of the statues-menhirs, their imagery, and the archaeological context. There is a large variability of the circular figures which do not fit with the conventional figuration of the sun disc. Moreover, the sun figuration does not exist on the more 'realistic' contemporary effigies from the other alpine valleys. Given the social importance of the body ornamentation in the Civate tradition and following our argument that statues-menhirs are effigies of individuals, it is possible that they were images of necklaces and equipment worn on the shoulder (see also Defrasne & Fedele 2015).

Material culture connected to what we interpret as male gender also include axes, halberds, daggers and sheaths. These objects are signs of high social status, particularly when made of copper. In addition, they may have depicted idealised gendered practices such

as harvesting, wood-cutting, and warring/hunting (Borić 2014, 18), which may also have participated in the construction of specific gender stereotypes (Bailey 2013, 253). Spatial relationships between these objects and the male body may also have been significant. The exact position of axes and halberds vary according to the statues-menhirs but they are systematically engraved at the top of the statues-menhirs, near the head or the shoulders. This is a connection shared by other types of human figurations (Borić 2014, 18) and also visible at contemporary graves in the Po Plain (Remedello Sotto, graves 78 and 102; De Marinis 2013, 309, 311). In addition, male bodies are engraved with plough ideograms highlighting the action of ploughing and the link with the ground (Fedele 2013a, 211). This activity was probably gendered and would have surely had a social and symbolic value.

Engraved objects highlight the strong link between body and material culture since stone bodies are defined, probably partly gendered and individualised with material culture. Each combination of engraved objects is individual-specific, and artefacts appear to have been of great importance in the construction of social identities. In other words, alpine communities emphasised differences between human bodies through their interactions with material culture. According to Robb (2009a, 179), the statues-menhirs ‘present a standardised, simplified model of a social person in terms of gendered materialities familiar from other spheres of life. [...] They clarify] the multiple systems of meaning which form everyday life’. Stone bodies are consequently both gendered stereotypes drawing on the repetition of a limited range of representations *and* individualised through the shape of the stone and the precise composition and layout of imagery. This is reminiscent of what Bailey (2008) noted about anthropomorphic figurines from southeastern Europe: identity is ‘the product of recognising similarities (evoking cohesion) and differences (evoking lack) from others through the media of the body’s shape’ (Bailey 2008, 63–4). Specificity of each stone body is blurred into a gendered stereotype to construct a Copper Age individual identity.

Engraved material culture invites us finally to consider gendered ontologies. From engraved axes and daggers, animal traction, and animal species, we could hypothesise that masculinity may have been connected with a direct action on the world (wood-cutting, ploughing, hunting) performed in the public space. These observations are reminiscent of other Neolithic studies (Maigrot & Beugnier 2005). In this way, from both imagery and the shape of the monoliths, statues-menhirs help us to understand gender constructs and roles in the central Alps of the third millennium cal BC.

UNGENDERED BODIES

A female-male binarism probably minimises the social reality of Copper Age communities. At the Anvòia site, a very small statue-menhir was erected without any engraved iconography. However, iconography may have been present at the time, since statues-menhirs were probably painted with natural pigments as indicated by ochre fragments with working surfaces discovered in archaeological layers (Fedele 2006a; 2006b). The small Anvòia statue-menhir is reminiscent of the small ones in Trentino, which are only engraved with facial features or textile clothes but no other artefact (Pedrotti & Tecchiati 2013, 225). As Bailey (1994, 329) noted about Balkan figurines, the structure of Neolithic society was not limited to a simple male-female division but included individuals who were identified neither as male nor female.

Social anthropological studies show that in many societies only adults can be gendered. The child is fully socialised only after its social birth, which may involve a rite of passage. The undefined status indicated by the absence of engraved objects on the smaller statues-menhirs could have represented a child. This interpretation may be supported by the presence of children's bones in ceremonial context at Anvoia (see below; Fedele 2008b) and also at ceremonial sites in Trentino, at Millan-Stockner (Tecchiati 2013, 465). If true, the presence of children in statues-menhirs alignments means that the erection of a statue-menhir is not related to the acquisition of power during life but rather to the representation of a kinship group and transgenerational structures. Consequently, we could tentatively suggest that the statues-menhirs from a ceremonial site represent people from the same social group.

Lastly the existence of statues-menhirs with both male and female imagery is worth noting, although that aspect may warrant its own study. It has been suggested that, over time, some female statues-menhirs were turned into male ones due to a gradual masculinisation of alpine societies (Fedele & Fossati 2012, 197–8). It is also possible that statues-menhirs with both male and female imageries reveal a flexibility and permeability of gender categories, similarly to what has been proposed for some Neolithic figurines (Bailey 2013, 246).

BODIES AND RELATIONSHIPS WITH NON-HUMAN ANIMALS

Statues-menhirs defined as male are also engraved with many animal figures, a characteristic specific to the central Alps. This animal imagery reflects preoccupations with non-human animals in relation to the human body. Animal figures correspond to 51% of the entire engraved iconography. Six species have been recognised: red deer (*Cervus elpabus*, male and female), ibex (*Capra ibex*), dog (*Canis lupus familiaris*), fox (*Vulpes vulpes*) or wolves (*Canis lupus*), pigs (*Sus scrofa domesticus*) or boars (*Sus scrofa*), and chamois (*Rupicapra rupicapra*). Oxen is not considered here because they are not depicted on their own but alongside the action of ploughing with the man and the ard (Fedele 2006b). These animals are chosen among the diversity of the alpine biota and are consequently evidence of a cultural filter and specific attitudes of Copper Age groups towards certain species, only big mammals, engraved on stone bodies in a ceremonial context. This selection may indicate ontological limits both within alpine species and mammals. These animal images have to be studied keeping in mind that dichotomies such as wild/domestic are western and modern conceptions and may not have been relevant in prehistoric societies. As archaeologists, we have to reveal real-world clues of relationships between animal species and the Copper Age groups.

On 17 statues-menhirs, animal species are preferentially represented in the right profile. From descriptive statistical analysis, red deer and ibex seem to have a special status. They are the most numerous (58%), the most commonly engraved (present on most statues-menhirs), and, concerning male individuals of each species, may be the only ones engraved without any other animal association. A Multiple Correspondence Analysis was performed to examine associations (Fig. 8.6). In the diagram, presence of male deer is opposed to presence of ibex. In other words, male deer and ibex were not associated with each other on statues-menhirs, except in some rare cases. This opposition between deer and ibex is also seen on other rock surfaces such as collapsed blocks and vertical cliffs (e.g. Cemmo 2 and Plas 1). The hierarchical

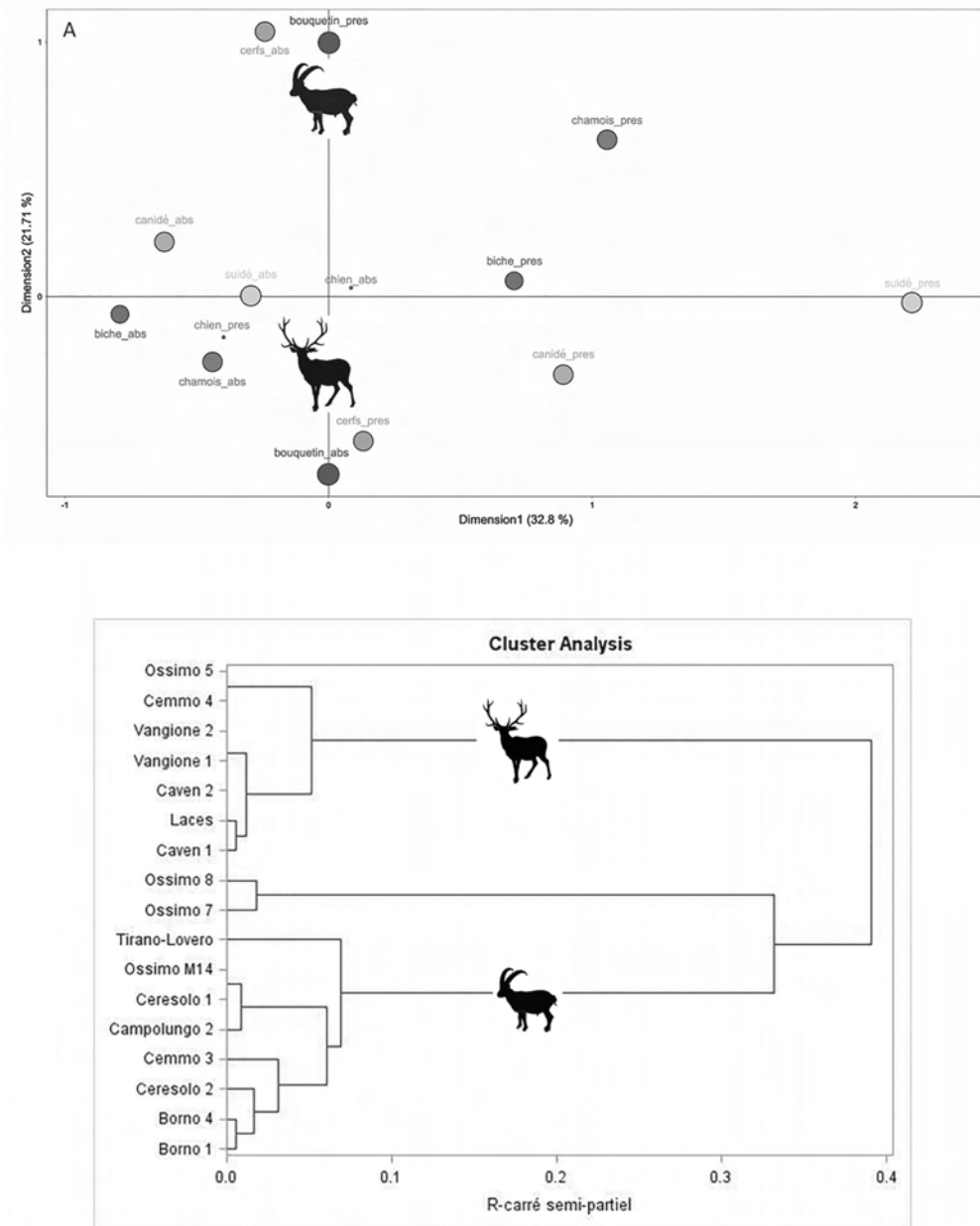


Fig. 8.6: Multiple Correspondence Analysis performed on data concerning the animal imagery. Top: factorial diagram of the variables. The presence of deer is opposed to the presence of ibex (CAD: C. Defrasne). Bottom: hierarchical clustering (Ward) from the first two factorial coordinates. Statistical criteria points to three classes ($R^2=0,800$). S. Cabut SAS/STAT® v.12.1. The corpus appears divided into two main groups: the deer stones and the ibex stones.

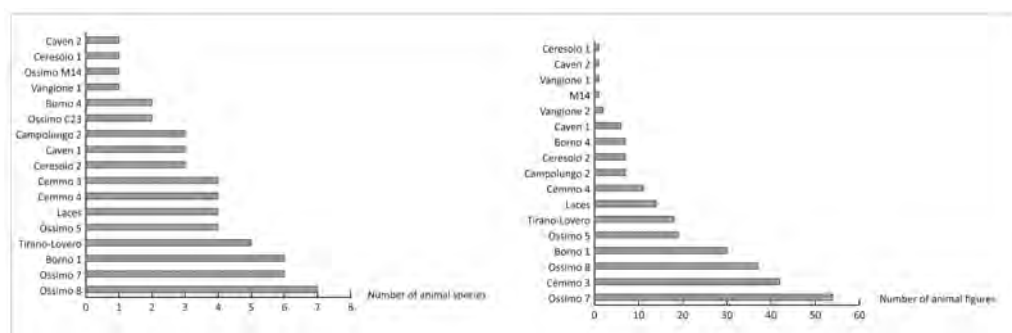


Fig. 8.7: Number of animal species and figures represented on statues-menhirs.

clustering from the same analysis highlights that the corpus of statues-menhirs may have been composed of two main groups, the deer stones and the ibex stones, confirming the special status of both species. Moreover, male red deer and male ibex are the only species closely associated with the dog (*Canis lupus familiaris*) on the stone bodies. The dog is easily identifiable thanks to its curly tail, a consequence of domestication (Fedele 1987). We can consequently suppose that this type of association refers to the concept or activity of hunting, even if no real hunting scene is figured. Indeed, as the hunter is not depicted it is worth considering whether the stone body itself is the hunter. Red deer and ibex may consequently have been special prey associated with specific hunting practice involving the dog. In addition to being distinguished by engraved animals, male stone bodies are also characterised by the number and diversity of animal figures (Fig. 8.7). Is it possible that they represented kill counts of individuals? Because of the low number of fully preserved statue-menhirs, this structure of what we consider as male stone bodies remains a hypothesis that will have to be confirmed or refuted in light of new discoveries. However, any deer/ibex association have been identified on the numerous partially preserved or fragments of statues-menhirs.

Nonetheless, the presence of animal species engraved on stone bodies suggests that male bodies are connected in some way to non-human animals. Just as high status artefacts, these relationships could have contributed to gender building and distinction, inter-individual distinction and social identity. Male deer and ibex allowed Copper Age communities to build differences between male bodies. This highlights the social role of non-human animals and their influence on the social structure of Copper Age groups, maybe through hunting. Hunting seems to contribute to the building of male identities and to structure the male parts of the society. A strong link between social dimensions (gender, social structure, and activities) and ecological ones (animal species) seems to have existed in Chalcolithic societies. Broader environment may have been called upon in the construction of social categories. This intricate connection also challenges the relevance of concepts such as nature/culture and wild/domestic for these prehistoric societies.

BODIES AND RELATIONSHIPS WITH THE TERRITORY

Statues-menhirs are stones 'planted' in the ground and as such they are directly connected with the territory of Copper Age communities. They are erected in special sites forming

a ceremonial network structuring the space which, once appropriated by the communities, becomes territory (Bonnemaison 1981, 253). Territory and stone bodies are gathered to produce a ceremonial landscape (Fedele 2011, 82), embedded with a mnemonic dimension as the ceremonial sites evoke the dead and the memory of the group. Moreover, the stone body alignments often emphasise topographical features such as natural terraces along the mountainsides, like at Pat and Plasagròp. At Anvòia and Caven, the bases of hills are emphasised. This suggests that meaning was given to geological boundaries and topographical features (Fedele 2008b, 73). Stone bodies appear partly constituted out of the territory of the community as a cultural environment.

The connection between stone bodies and the territory is also evidenced by the stylistic variation of the engraved material culture, particularly of the pommels of the Remedello-type daggers and the female body ornaments. Descriptive statistics show that this variability depends on the geography, semi-circular pommels being characteristic of the Valcamonica while semi-discoid ones are almost exclusive to the Valtellina. The statues-menhirs from the Borno/Lozio area bear depictions of both types of pommels, but seem closer to the Valtellina style. As for the composition of female body ornaments, the same objects are used but the direction in which one of them is engraved varies from the Valcamonica to the Valtellina. As evidenced by anthropological studies, body ornaments have a strong identity connotation. The differences between statues-menhirs in the central alpine valleys echo the inversion systems described by Lévi-Strauss (1975, 78) in which stylistic choices of neighbouring groups are opposed.

ARE STONE BODIES REPRESENTATIONS?

It is also possible to look for material clues of how these stone bodies were considered by the Copper Age communities themselves, if we are mindful of the influence of our own ontological categories. Are the menhirs really (or only) representations of bodies in stone? First, stone bodies have their own biographies (Fedele 2006a). They are constructed through time, in a constant process of becoming (Bailey 2008, 58). Indeed statues-menhirs are re-engraved, returned to and sometimes displaced. Stone bodies evolve over time just like ‘real’ human bodies, whose social construction is always ongoing (Robb 2009b, 124). Moreover, stone bodies could have been fragmented just like real bodies in the local funerary tradition. Indeed, Fedele (2006a; 2008b) suggested that there may be a parallel between the treatment of the statues-menhirs and the treatment of the dead and their bones. At the Anvòia site, fragmented, burned and coloured fragments of skull and teeth of an adult and a child were discovered under a cairn, one of the main structures at the site, and among the stones of the cairn were two fragments of statues-menhirs. One fragment is engraved with a Remedello-type dagger whose handle is clearly different from the others from Anvòia. Moreover, the blue-grey sandstone of a female fragment is unparalleled at Anvòia. Fedele (2004) suggests that ‘stone relics’ were brought to the site alongside the human relics from a funerary rockshelter. The convergence between stones and human bodies is also illustrated by the juxtaposition under the cairn of burned (and consequently white) bones and white marls. This type of rock is rare in the site environment. Was this chromatic equivalence also semantic? In other words, these white marls seem to have been spread on the bedrocks to evoke the human bones (Fedele 2006a, 36; Fedele 2008b, 67).

Statues-menhirs may have been fragmented and translocated just as the bodies of the dead, which points to an equivalence between rock and the human body. Stone bodies were probably not perceived as inert things but were much more loaded with special meaning and agency. Maybe statues-menhirs did not *represent* bodies, but *were* bodies. They may have been conceptualised as beings rather than objects.

CONCLUSION

I hope that this systematic study of the widely published statues-menhirs from the central Alps contributes to a better understanding of the Copper Age society. Through the stone bodies, the individual builds a relationship with material culture, other gender(s), animal species, the territory and probably the dead. Bodies appear to be made of connections with various entities. More broadly, social facts and ecological ones are blurred into practices involving the human body. To highlight how the body is entwined with or constituted of various aspects of social life, one only has to look at the concepts referred to when studying stone bodies: individual, age, gender, material culture, temporality, mortuary practices, territory, non-human animals, hunting, ploughing, ontology. When we consider the body in archaeology, we consider many social aspects of these societies long gone.

I would like to end this paper with a suggestion that these stone bodies were a microcosm. The preferred location of some of the images on the statues-menhirs (deer in the upper-central part of the statues-menhirs, chamois in the left part, plough in a 'functional' position on the ground level) invite us to consider the stone body as a structured space, maybe as the world was supposed to be in an analogic perspective. Caution here is necessary again, but future discoveries will maybe provide additional evidence.

NOTE

1 The results presented here are from a PhD study examined in 2013 (Defrasne 2013).

REFERENCES

- Bailey, D. W. (1994) Reading prehistoric figurines as individuals. *World Archaeology* 25, 321–31.
- Bailey, D. W. (2008) Neolithic bodies beyond the grave: Corporealities of being. *Acta Musei Varnaensis* 6, 57–74.
- Bailey, D. W. (2013) Figurines, corporeality, and the origins of the gendered body. In D. Bolger (ed.) *A Companion to Gender Prehistory*, 244–64. Chichester, John Wiley & Sons.
- Barfield, L. H. (2007a) Beads and other necklace elements. In L. H. Barfield (ed.) *Excavations in the Riparo Valtenesi, Manerba, 1976–1994*, 296–331. Firenze: Istituto Italiano di Preistoria e Protostoria.
- Barfield, L. H. (2007b) Discussion of the Copper Age cemetery. L. H. Barfield (ed.) *Excavations in the Riparo Valtenesi, Manerba, 1976–1994*, 431–59. Firenze, Istituto Italiano di Preistoria e Protostoria.
- Boëtsch, G. (2007) Entretien avec Philippe Descola. *Corps* 2, 5–11.
- Bonnemaison, J. (1981) Voyage autour du territoire. *L'Espace géographique* 4, 249–62.

- Borić, D. (2014) Mortuary practices, bodies and persons in the Neolithic and Early–Middle Copper Age of southeast Europe. In C. Fowler, J. Harding and D. Hofmann (eds.) *The Oxford Handbook of Neolithic Europe*, 927–58. Oxford, Oxford University Press.
- Breton, S., Coquet, M., Houseman, M., Schaeffer, J. M. (eds.) (2006) *Qu'est-ce qu'un corps? Afrique de l'Ouest, Europe occidentale, Nouvelle-Guinée, Amazonie*. Paris, Musée du Quai Branly.
- Butler, J. (1999) *Gender Trouble: Feminism and the Subversion of Identity*. London, Routledge.
- Cassen, S. (2009) *Exercice de stèles, une archéologie des pierres dressées*. Paris, Errance.
- Corboud, P. (2009) Les stèles anthropomorphes de la nécropole néolithique du Petit-Chasseur à Sion (Valais, Suisse). *Bulletin d'études préhistoriques et archéologiques alpines* 20, 9–97.
- Cornaggia Castiglioni, O. (1971) *La "Cultura di Civate": Una nuova "facies" arcaica della "Civiltà eneolitica" della Lombardia*. Milano, Museo Civico di Storia Naturale di Milano.
- Danesi, A., Poggi, D. and Fedele, F. G. (2014) Selezione del litotipo e ricerca di effetto cromatico nell'età del Rame: Il caso del monolito Anvoia 14 (Ossimo, Valcamonica). *Notizie Archeologiche Bergomensi* 22, 31–44.
- De Marinis, R. C. (1994) La datazione dello stile III A. In S. Casini (ed.) *Le pietre degli dei. Menhir e stele dell'età del Rame in Valcamonica et Valtellina*, 69–87. Bergamo, Civico Museo Archeologico et Centro Culturale Nicolo Rezzara.
- De Marinis, R. C. (2013) La necropoli di Remedello Sotto e l'età del rame nella pianura padana a nord del Po. In R. C. De Marinis (ed.) *L'età del Rame. La pianura Padana e le Alpi al tempo di Ötzi*, 301–51. Brescia, Compagnia della Stampa Massetti Rodella editori.
- Defrasne, C. (2013) *Images gravées et corps de pierre. Fragments d'ontologie dans les Alpes centrales du IIIe millénaire av.n.è.* Unpublished PhD Thesis Aix-Marseille Université/Università degli Studi di "Napoli Federico II".
- Defrasne, C. and Fedele, F. G. (2015) Contextualiser l'imagerie préhistorique. Les figures circulaires et la figure "a bandoliera" des monolithes chalcolithiques centre-alpins. *Bulletin de la Société Préhistorique Française* 112, 543–65.
- Fedele, F. G. (1987) Canidi nella preistoria alpina: paleobiologia e iconografia, Rivista piemontese di storia naturale. *Rivista piemontese di storia naturale*, 8, 93–122.
- Fedele, F. G. (1988) Appunti per un'archeologia del paesaggio in Valcamonica. In F. G. Fedele (ed.) *L'uomo, Le Alpi, La Valcamonica: 20 000 anni al Castello di Breno [in occasione della mostra, Chiesa di S. Antonio a Breno, settembre 1988]*, 193–8. Boario Terme, Consorzio B. I. M. de Vallecamonica.
- Fedele, F. G. (1990) Cornice fisica e storia ambientale. In F. G. Fedele (ed.) *L'altopiano di Ossimo-Borno nella preistoria. Ricerche 1988–90*, 183–8. Capo di Ponte, Edizioni del centro.
- Fedele, F. G. (1994) Il contesto rituale delle stele calcolitiche camuno-valtellinesi: Gli scavi di Ossimo (Valcamonica). *Contributi allo studio dell'archeologia e dell'arte rupestre in Valcamonica e nell'arco alpino* 2, 37–66. Bergamo, Civico Museo Archeologico.
- Fedele, F. G. (2003a) Il programma di ricerche al Castello di Breno, 1980–85. In F. G. Fedele (ed.) *Ricerche archeologiche al Castello di Breno, Valcamonica. I: Notizie generali. Ceramica neolitica e calcolitica*, 11–34. Bergamo, Bergamo Civico museo archeologico.
- Fedele, F. G. (ed.) (2003b) *Ricerche archeologiche al Castello di Breno, Valcamonica. I: Notizie generali. Ceramica neolitica e calcolitica*. Bergamo, Civico Museo Archeologico.
- Fedele, F. G. (2004) Monoliths and Human Skeletal Remains: Ritual Manipulation at the Anvoia Ceremonial Site, Ossimo (Valcamonica, Italy). In S. Casini and A. Fossati (eds.) *Le Pietre degli Dei. Statua-stele dell'età del Rame in Europa. Lo stato della ricerca*, 49–66. Bergamo, Civico Museo Archeologico.
- Fedele, F. G. (2006a) *Asinino-Anvoia: Il parco archeologico*. Cervenno, Cooperativa Archeologica "Le Orme dell'Uomo."
- Fedele, F. G. (2006b) La traction animale au Valcamonica et en Valteline pendant le Néolithique et le Chalcolithique. In P. Pétrequin, R.-M. Arbogast, A.-M. Pétrequin, S. van Willigen and M. Bailly

- (eds.) *Premiers chariots, premiers araires. La diffusion de la traction animale en Europe pendant les IV^e et III^e millénaires avant notre ère*, 47–61. Paris, CNRS Editions.
- Fedele, F. G. (2008a) *Ossimo 2. L'area cerimoniale dell'Età del Rame di Ossimo-Anvòia e ricerche territoriali 1996–2004*. Brescia, la Cittadina.
- Fedele, F. G. (2008b) Statue-menhirs, human remains and mana at the Ossimo 'Anvòia' ceremonial site, Val Camonica. *Journal of Mediterranean Archaeology* 21, 57–79.
- Fedele, F. G. (2011) Origini dell'ideologia cerimoniale centroalpina dell'età del Rame: una “fase zero” di IV millennio? In S. Casini (ed.) *Il filo del tempo. Studi di preistoria e protostoria in onore di Raffaele Carlo De Marinis*, 77–100. Bergamo, Civico Museo Archeologico.
- Fedele, F. G. (2013a) Diffusion de la traction animale en Europe: contexte et idéologie d'après l'imagerie rupestre des Alpes centrales italiennes. In M. A. Borrello (ed.) *Les hommes préhistoriques et les Alpes*, 227–43. Oxford, Archaeopress.
- Fedele, F. G. (2013b) La società dell'età del Rame nell'area alpina e prealpina. In R. C. De Marinis (ed.) *L'età del Rame. La pianura Padana e le Alpi al tempo di Ötzi*, 45–67. Brescia: Compagnia della Stampa Massetti Rodella editori.
- Fedele, F. G. and Fossati, A. (2012) L'area cerimoniale di Anvoia a Ossimo, Valcamonica: i monoliti simbolici e il loro contesto. Istituto italiano de Preistoria e Protostoria (eds), *L'arte preistorica in Italia. Atti della XLII^o Riunione scientifica dell'Istituto Italiano de Preistoria e Protostoria (Trento, Riva del Garda, Valcamonica, 9–13 ottobre 2007)*, 189–99. Trento, Museo tridentino di Scienze naturali.
- Fedele, F. G. and Fossati, A. (2014) Il monolito M1 di Plasagróp (“Ossimo 6”). *Notizie Archeologiche Bergomensi* 21, 49–61.
- Fedele, F. G., Fossati, A. and Giorgi, A. (2014) Archeologia preistorica della valle di Lòzio (Valcamonica). Primo contributo. *Notizie Archeologiche Bergomensi* 22, 45–94.
- Gell, A. (1998) *Art and Agency. An Anthropological Theory*. Oxford, Clarendon Press.
- Harris, O. J. T. and Robb, J. E. (2012) Multiple ontologies and the problem of the body in history. *American Anthropologist* 114, 668–79.
- Harrison, R. and Heyd, V. (2007) The transformation of Europe in the third millennium BC: The example of “Le Petit-Chasseur I+III” (Sion, Valais, Switzerland). *Prähistorische Zeitschrift* 82, 129–214.
- Heyd, V. (2013) L'Europa nell'età del Rame: la “calcolitizzazione” di un continente. In R. De Marinis (ed.) *L'Età del Rame. La pianura Padana e le Alpi al tempo di Ötzi*, 23–38. Brescia, Compagnia della Stampa Massetti Rodella editori.
- Klassen, L., Cassen, S. and Pétrequin, P. (2012) Alpine axes and early metallurgy. In P. Pétrequin, S. Cassen and M. Errera (eds.) *JADE. Grandes haches alpines du Néolithique européen. V^e et IV^e millénaires av. J.-C.*, 1280–309. Besançon-Gray, Presses Universitaires de Franche-Comté-Centre de Recherche Archéologique de la Vallée de l'Ain.
- Levi-Strauss, C. (1975) *La voie des masques*. Genève, Skira.
- Maigrot, Y. and Beugnier, V. (2005) La fonction des outillages en matières dures animales et en silex au Néolithique final. Le cas des sites littoraux des lacs de Chalain et Clairvaux (Jura, France) au 30^e siècle avant notre ère. *Bulletin de la Société préhistorique française* 102, 335–44.
- Mezzena, F. (1997) *La valle d'Aosta nel Neolitico e nell'Eneolitico*. Firenze/Pisa, Istituti editoriali e poligrafici internazionali.
- Nanoglou, S. (2008) Representation of humans and animals in Greece and the Balkans during the Earlier Neolithic. *Cambridge Archaeological Journal* 18, 1–13.
- Pedrotti, A. and Steiner, H. (2014) Due nuove statue-stele da Vezzano comune di Silandro (Val Venosta, BZ): Primi dati sull'uso della trasformazione e reimpiego dei monumenti nel gruppo atesino. In R. C. De Marinis (ed.) *Le manifestazioni del sacro e l'età del Rame nella regione alpina e nella pianura padana. Studi in memoria di Angelo Rampinelli Rota. Atti del Convegno “Le manifestazioni del sacro*

- e l'età del Rame nella regione alpina e nella pianura padana*” Brescia, Palazzo Broletto, 23–24 maggio 2014, 111–26. Brescia: Euroteam.
- Pedrotti, A. and Tecchiati, U. (2013) Iconografia e simbologia delle statue-stele dell’area atesina e lessinica. In R. C. De Marinis (ed.) *L’età del Rame. La pianura Padana e le Alpi al tempo di Ötzi*, 221–31. Brescia: Compagnia della Stampa Massetti Rodella editori.
- Pétrequin, P., Cassen, S., Gauthier, E., Klassen, L., Pailler, Y. and Sheridan, A. (2012) Typologie, chronologie et répartition des grandes haches alpines en Europe occidentale. In P. Pétrequin, S. Cassen and M. Errera (eds.) *JADE. Grandes haches alpines du Néolithique européen. Ve et IVe millénaires av. J.-C. Cahiers de la MSHE C. N. Ledoux, Besançon, Presses Universitaires de Franche-Comté*, 574–727. Besançon-Gray: Presses Universitaires de Franche-Comté-Centre de Recherche Archéologique de la Vallée de l’Ain.
- Robb, J. E. and Harris, O. J. T. (2013) *The body in history: Europe from the Paleolithic to the future*. Cambridge, Cambridge University Press.
- Robb, J. E. (2008) Tradition and agency: Human body representations in later prehistoric Europe. *World Archaeology* 40, 332–53.
- Robb, J. E. (2009a) People of stone: Stelae, personhood, and society in prehistoric Europe. *Journal of Archaeological Method and Theory* 16, 162–83.
- Robb, J. E. (2009b) Towards a critical ötziography: Inventing prehistoric bodies. In H. Lambert and M. Mc Donald (eds.) *Social Bodies*, 100–28. Oxford, Berghahn.
- Robb, J. E. (2012) History in the Body. The scale of belief. In J. E. Robb and T. R. Pauketat (eds.) *Big Histories, Human Lives. Tackling Problems of Scale in Archaeology*, 77–100. Santa Fe: SAR Press.
- Sneed, E. D. and Folk, R. L. (1958) Pebbles in the lower colorado river, Texas. A study of particle morphogenesis. *Journal of Geology* 66, 114–50.
- Taylor, A.-C. and Viveiros de Castro, E. (2006) Un corps fait de regards. In S. Breton, M. Coquet, M. Houseman and J. M. Schaeffer (eds.) *Qu’est-ce qu’un corps?: Afrique de l’Ouest/Europe occidentale/Nouvelle-Guinée/Amazonie*, 148–99. Paris, Musée du Quai Branly.
- Tecchiati, U. (2013) Economia di sussistenza nell’età del Rame dell’Italia settentrionale. Il contributo di archeozoologia e archeobotanica. In R. C. De Marinis (ed.), *L’età del Rame. La pianura Padana e le Alpi al tempo di Ötzi*, 87–100. Brescia, Compagnia della Stampa Massetti Rodella editori.
- Telban, B. (1998) Body, being and identity in Ambonwari, Papua New Guinea. In V. Keck (ed.) *Common Worlds and Single Lives: Constituting Knowledge in Pacific Societies*, 55–70. Oxford, Berg.
- Théry, I. (2010) Le genre: Identité des personnes ou modalité des relations sociales. *Revue française de pédagogie* 171, 101–17.

The Neolithic body

Julian Thomas

INTRODUCTION

Twenty years ago, the issue of the Neolithic body began to emerge in new and pressing ways. With the development of experiential or phenomenological archaeologies, it was emphasised that the material world, from architecture to landscape, is *lived through* corporeally, rather than merely observed from a distance. Human beings and other creatures develop their familiarity with their surroundings through processes of sensuous engagement (Tilley 1994, 14; Ingold 2000, 185). However, the interpretations of prehistoric monuments and topographies that were developed during this period sometimes relied (implicitly or explicitly) on the notion that the human body is a universal and changeless phenomenon. Consequentially, it was effectively argued that we can ground our analysis on what we have in common with past people: A fleshly frame and a sensory apparatus that negotiates and apprehends the tangible world in fixed and definable ways. Our experiences and understandings of megalithic tombs or cursus monuments in the landscape today are therefore comparable with those of prehistoric people. But it was soon pointed out that this conception of a transhistoric body capable of generating archetypal experiences was flawed, since the ways in which people understand their own bodily existence are highly culturally variable (Brück 1998, 26). This recognition took place alongside a growing interest in archaeologies of identity, personhood, and embodiment (Meskell 1996; Hamilakis *et al.* 2002; Fowler 2004). These emerging perspectives would question what *kinds* of bodies existed in the past, and what sorts of experiences and forms of engagement they might have sustained. How might Neolithic bodies have differed from those of the modern archaeologists who sought to comprehend them? And how diverse might these bodies and their perceptions have been, depending upon age, gender, disability and other factors that it might be more difficult for us to apprehend?

In the wider social sciences, the same period saw the development of what might be termed post-humanist approaches to embodiment, particularly within feminism and queer theory (see Braidotti 2013 for discussion). Here it was increasingly argued that the body should not be understood as having a fixed and essential nature, since it should be seen less as a stable physical object and more as something in a state of emergence and becoming, under particular historical conditions. The way that the body was perceived, and its capacities, are not set in stone, but vary according to context (Gatens 1996, 57).

Particularly important in this connection was the work of Judith Butler, who drew on discussions of subjectification by Michel Foucault and others to argue that the body's materiality is not given but made, and indeed continuously remade through the process of performativity. For Butler (1993), materiality has traditionally been opposed to signification and discourse (as matter is opposed to thought), and since a body is a tangible thing its reality is irreducible and exists beyond language and discussion. Cultural identifications can be freighted on top of the body, but the material body itself is understood as being something that occupies a space that transcends construction. For Butler (1993, 29), the difficulty with this perspective is that it ontologises sexual difference, rendering it unquestionable: Human bodies simply have particular reproductive organs, and gender is never anything more than a cultural interpretation of this state of affairs. But she goes on to dispute this position, noting that the essential fixity of the material body, and its existence prior to language, is always itself posited *in language*. Butler argues instead that the body's materiality emerges through the performative reiteration of gendered norms of behaviour, acts and gestures that are conditioned by power relations within a given society. So bodies must *matter* in a particular way in order to be socially recognised, to achieve a particular kind of visibility. In Butler's view, materiality and language are always mixed up with each other from the start, rather than opposed. However, the question of how the material world might *be*, entirely in isolation from any human knowledge and conceptualisation, is an issue that has emerged in more recent philosophical work, and might be taken as an implicit challenge to aspects of Butler's arguments (e.g. Meillassoux 2008, 5).

NEOLITHIC BODIES

It is in relation to these developments that we should consider recent discussions of the Neolithic body – or rather, the comparative lack of such discussions. For given the way that the question of Neolithic embodiment surfaced at the turn of the millennium, it is striking that relatively few contributions have explicitly asked the question: what were Neolithic bodies like? One clear exception is John Robb and Oliver Harris' book, *The Body in History: Europe from the Palaeolithic to the Future* (2013), in which the authors introduce the useful concept of 'body worlds'. In a way that is to some extent reminiscent of Butler, a body world constitutes the range of practices and relationships from which the body emerges in a particular historical moment, as something that is lived, experienced, understood and represented. However, Robb and Harris go on to argue that at any given time conceptions of the body may be 'multimodal': there may be more than one understanding of the body in play simultaneously. Robb and Harris discuss the entire span of human existence, so that their treatment of the Neolithic is comparatively brief, but it remains instructive. They note that throughout the Neolithic in Eurasia the development of permanent architectural spaces will have had the effect of channelling movement, so that bodily action may have become more formalised. At the same time, the bodies of the dead took on a greater importance in community life, a continuous social presence with whom people interacted sporadically, and which served as vehicles for the expression of ideas about ancestry and collective identity. Bodies were more extensively figured in art and representation than previously,

constituting entities of interest in their own right, in the forms of figurines and rock art. But the prevalence of exogenous goods as bodily ornaments in ‘community’ cemeteries, the role of hunting as a peripheral practice, and the atypical funerary treatment of the victims of violence and warfare convince the authors that Neolithic understandings of the body were marked by contradiction and plurality (Robb & Harris 2013, 58).

Another study that attempts a holistic understanding of Neolithic bodies is Daniela Hofmann’s rather more focused account of corporeality in the European *Linearbandkeramik*. For Hofmann (2013, 157), the body is something that is unstable, constantly in a process of becoming, gradually changing through the process of aging, and responding to the various forces and influences of movement, work, and damage. Discussing the deposits of disarticulated bones that had been subject to elaborate forms of processing and treatment from the ditches of the LBK site at Herxheim in Germany, she argues that the body was here understood as a composite of a variety of different materials and substances that had been brought together in life, but which might be deconstituted and reconstituted in a variety of different ways. Needless to say, such a conception of the body is far removed from the modern western stereotype of a bounded and integral individual.

These observations provide us with a point of departure for discussing the various chapters in this book, which collectively take up the deferred challenge of addressing Neolithic corporeality. They are written from a variety of different perspectives: demographic, physical anthropological, artefactual, architectural and social-scientific. This underlines both a strength and a potential frailty of archaeologies of the body: they can draw on a range of specialisms, and this means that they can provide a framework for the integration of different forms of information, but they can equally become atomized and fragmented (Nilsson Stutz 2016). This is arguably all the more so in the case of the material under consideration in this volume, for the Neolithic represents more than just a specific chronological interval, and is distinguished by a series of parallel and fundamental technological, social and economic transformations. These include (but are not limited to) the domestication of plants and animals, the elaboration of domestic and monumental architecture, new regimes of residence and mobility, changing demographic structures, new patterns of disease and morbidity, new culinary practices, more intensive networks of exchange, more elaborate mortuary observances, new forms of social gathering and interaction, and a much more ‘thing-rich’ social environment that drew upon a constellation of new technologies. It is arguable that all of these developments were mediated through the body, so that the body itself became the terrain over which the process of Neolithisation was played out. Arguably, then, the ‘Neolithic body’ might have been something quite specific, formed by a distinctive array of forces, and absolutely unlike that of other periods. Equally, if all of the changes of the period clustered around the body and the ways in which it might be deployed and experienced, we might expect that human physicality would have represented a contested area, or even a source of tension throughout the Neolithic.

Most significantly of all, the human body unites the themes of production and reproduction. That is, the body connects physical labour and economic accumulation with sexuality, birth, kinship and descent, as well as personal and collective identity. What arguably distinguished the Eurasian Neolithic was that these issues were continually in the process of being worked through and negotiated. Neolithic life demanded a social

framework that enabled resources, wealth and labour to be collectively appropriated, and passed between generations, while excluding outsiders (Thomas 2015a). This had largely not existed in the Mesolithic, and yet it represented the fundamental prerequisite for *being Neolithic*. It might be conjectured that throughout the period we can identify struggles to harness the body to the demands of collective identification, of collective labour, and of biological and social reproduction.

Robb (2013) has argued that one of the defining attributes of the European Neolithic was the development of a new relationship between people and material things. Where hunters and gatherers had often minimised their investment in artefacts in order to facilitate portability and mobility, and as a means of resisting inequality, pottery, polished stone tools, domestic dwellings and traded exotica (not to mention the facilities required for herding, cultivation and food processing) were easier to adopt than to relinquish. As a result, few communities ever reverted to a fully Mesolithic way of life: Neolithisation was a one-way street. This argument echoes Ian Hodder's (2012) discussion of the way that people and material things have become progressively entangled through the course of world history, each increasingly dependent on the other. It is worth spelling out what this implies for the human body. Robb and Harris (2013) point to the way that domestic architecture will have spatially ordered everyday movement, but a denser world of made things would have the effect of structuring a much wider variety of actions and practices. Pottery vessels will have organised the preparation and serving of food; items such as stone axes, bows and arrows, amulets and necklaces will have clarified personal identities, including status, age and gender, streamlining social interactions; more diverse stone tool assemblages guided the performance of specific tasks; various forms of monuments and enclosures established the conditions for encounters between the living and the dead, or between different groups of the living. In general, the proliferation of artefacts and architectures provided an overarching 'scaffolding' for social life, reducing the need for deliberation in day-to-day conduct. The implication of this is that bodily activities, tasks, movements and gestures may often have had a more routinised and habitual character during the Neolithic, guided as they were by a series of material 'prompts'. Moreover, many of the material items that were employed during the Neolithic in Europe will have had the effect of extending the body's capacities or altering its appearance: clubs and arrowheads, sickles and antler picks, saws and adzes, cups and bowls, pins and pendants. We might go so far as to suggest that, to a rather greater extent than in the Mesolithic, Neolithic bodies were 'cyborgs', composed of both organic and inorganic elements (Haraway 2016, 11).

FORMING BODIES

In a purely anatomical sense, too, Neolithic ways of life impacted upon the human body. Neolithic bodies were labouring bodies, capable of coordinating their activities in the processes of material production, and in the construction of dwellings and monuments. The rhythms, routines, and repetitive tasks of nurturing animals, growing plants and processing foodstuffs moulded bodies, creating distinctive patterns of wear and tear on bones and tendons (Molleson 1994). So too, structural characteristics of the lower limb bones reveal

changes in residential mobility through the Neolithic (Ruff *et al.* 2015), although not always indicating an immediate shift to year-round sedentism, a pattern that is supported by oxygen and strontium isotope measurements from human tooth enamel (Neil *et al.* 2015, 11). More subtly, one consequence of decreasing (or more tethered) mobility, and the employment of pottery to produce soft, boiled foods may have been the earlier weaning of infants, and a consequent reduction in the spacing of births amongst women (Konner 1978). In this sense, Neolithic embodiment may have differed from that of hunter-gatherers in terms of sexuality, reproduction, and apprehensions of gender. In some areas, such as parts of the Near East and the Balkans, Neolithic communities lived in high-density conditions, and in close proximity to animals. One consequence of this will have been the possibility for particular diseases and parasites to be communicated from person to person, and from animal to person (Armelagos *et al.* 1991). Locations with long-lived sedentary occupation, such as the tells of southeast Europe and the stone villages of Orkney, may also have suffered from the accumulation of masses of food waste and human and animal excrement. Together with significant changes in diet, this may have meant that Neolithic bodies were subject to different ailments than their predecessors (Roberts & Cox 2003, 387). If Neolithic ways of life involved both the collective appropriation of herds of animals, cultivation plots and wealth objects by human groups and the enhancement of the boundedness and shared identity of communities, it is to be expected that episodes of inter-group violence would have increased in the period. These might have included disputes over resources and marriage partners, as well as simple raiding. The consequence will have been bodies that were more accustomed to fighting, and which had more often received wounds of various kinds, as well as forms of violence and mutilation performed on the bodies of the dead (Schulting & Fibiger 2012).

As Harris (this volume) points out, investigations into Neolithic bodies have tended to be preoccupied with death, given the obvious reality that we most directly encounter Neolithic people in the form of human remains. Nonetheless, the treatment of cadavers has much to tell us about the broader perception of the body. In Britain, it has often been noted that skeletal material was broken down and rearranged within mortuary facilities, and that particular bones may have been circulated between locations of different kinds, and even maintained as heirlooms (Fowler 2010). This suggests that to some extent the human body was conceived as being partible, amenable to being reduced to its constituent elements (see Harris this volume). But at the same time, this pattern contrasts with the preceding Mesolithic, in which Conneller (2006, 161) identifies disarticulation followed by *dispersal* as a more common pattern. Conceivably, this could indicate that Neolithic corpses, although being recognised as capable of resolution into body parts, nonetheless constituted a resource that required management and accumulation. While the essence or life-force of the Mesolithic dead was perhaps absorbed back into the landscape from whence it had gained sustenance, in the Neolithic it was sometimes jealously husbanded. This may have been especially the case with the long mounds and chambered cairns of the earlier Neolithic, which sometimes contained only the remains of one or two generations of the dead, rather than constituting ossuaries that might have remained in use for centuries, as has often been presumed (Thomas 2015b). Under these circumstances the tangible remains of a group of founding ancestors, from whom the living community claimed their descent,

may have represented more than objects of veneration. The possibility that bodies were understood as being composed of powerful (and perhaps volatile) substances, perhaps accumulated in life, links mortuary practice with the study of food and nutrition. Feasting appears to have been a common phenomenon throughout Neolithic Europe, although this rarely took a form in which an elite 'cuisine' was distinguished from everyday food (Dietler 2011). Rather, what was at stake in episodes of collective consumption was the provision of especially large quantities of food, and particularly meat (Sergeantson 2006, 114). Neolithic people did not aspire to tickle their palates with exotic delicacies, but to gorge themselves on roast flesh. This is of a piece with the themes of accumulation and the control of vital substances, an economy of flows in which the body was implicated in both life and death.

A further aspect of Neolithic embodiment is that of dress, adornment and display. Aside from rare examples such as the 'Iceman' from the Ötztal Alps, with his cap, leggings, cloak and shoes (Spindler 1994, 132), much of what we know about Neolithic clothing is limited to dress fittings, fasteners, toggles, buttons and pins. Yet the existence of beads, necklaces, boar's tusks and shell decorations demonstrates that personal appearance was of some importance (and in some areas became progressively more so as the period developed). It has sometimes been noted that the incised decoration on some Neolithic pottery vessels bears a resemblance to scarification marks (*e.g.* Henley 2005, chapter 4), and the possibility should be considered that Neolithic body modifications included both scarring and tattooing. Finally, although the existence of architecturally complex monumental structures, often containing elaborate deposits of one kind or another, has long led archaeologists to speculate about the importance of ritual, ceremonial, procession and pilgrimage in the Neolithic (*e.g.* Bradley 2005), the implications of this in relation to the body have not always been drawn out. For one of the distinguishing features of ritual is that it is performative: it involves singing, dancing, processing, and adopting stylised bodily postures and gestures (Bloch 1974). It follows from this that a further characteristic of the Neolithic body is that of trained, skilled performance. At least some Neolithic people must have been adept at using their bodily comportment as a form of communication, or as a means of emphasising the significance or solemnity of particular acts and events. It is highly likely that the elements of ceremonial performance would have formed long-lived, inherited traditions, so that people would have been accustomed to holding themselves and moving in ways that were both normative and sanctioned by the past. This might also apply to the way that bodies were employed in warfare and other acts of violence, which might be both skilled and stylised, especially if conflict had a ceremonial dimension, and represented a form of display.

DIMENSIONS OF NEOLITHIC CORPOREALITY

Having established the parameters of what an archaeology of the Neolithic body might look like, it is clear that the papers in this volume enrich such a project in a variety of different ways. The chapter by Abigail Ash and Ron Pinhasi concentrates on physiological markers of stress in *Linearbandkeramik* communities in continental Europe, comparing the 'frontier' zone of the west with groups further to the east and south. People in the western area

showed greater evidence of stress, but nonetheless they had lower infant mortality. Ash and Pinhasi argue that for a variety of reasons it was more difficult to sustain an agricultural way of life in the western zone. Here, the productivity of an economic regime based on domesticates was lower, meaning that farming had to be supplemented with other forms of nutrition, such as hunting for meat. Shortage of food may have meant that children continued to be suckled until later. This may have explained both the reduced number of deaths in childhood and the later onset of dental hypoplasia, although it may also have been partially responsible for the higher incidence of other nutritional deficiencies. Ash and Pinhasi's subtle arguments demonstrate the complex and sometimes indirect ways in which environment and subsistence economy impact on the human body, producing manifestations which may initially appear counterintuitive. Their view that agriculture did not always provide richer and more reliable sources of food can be placed alongside the evidence for mass killings in the LBK period (Wahl & Trautmann 2012) to suggest that the picture of the earliest Neolithic north of the Alps as a time of peace, plenty and confident expansion has sometimes been overstated.

Harris' contribution builds pleasingly on the arguments of the Robb and Harris volume in order to develop a more detailed picture of the 'body world' of the British earlier Neolithic. In line with the notion of multimodality, he emphasises two distinct aspects of the early Neolithic body: separation and partibility, as opposed to flows and permeability. In death, bones became hard, discrete, partible entities, which could be circulated, exchanged and recombined, and in this respect they could be seen as having affinities with material items such as stone axes. But death also revealed another modality of the body: of flow, leakage and decay. This, Harris suggests, also found a resonance in material culture, in the flow of clay into ceramic vessels. An attractive aspect of his argument is the way that his two Neolithic 'ontologies' extend beyond human bodies to artefacts and the bodies of animals, which were often treated in ways that are comparable with the human dead. Equally, Harris' emphasis on the performativity of violence, performed both by and upon bodies, suggests fruitful directions for future research. One question that might be asked, however, is whether permeability and partibility really did represent separate and competing ontologies (as they certainly do in some contemporary societies: Busby 1997). Might they not instead form complementary aspects of a single ontological structure? Thus, for instance, the partibility of the human skeleton is made possible by the flow of bodily decomposition, while the breaking of a pottery vessel into fragments allows its contents to seep out.

The connections between bodies and material culture are powerfully underlined in Emilie Sibbesson's chapter. As she correctly points out, it is the human body that forms the crucial connection between the various disparate forms of evidence for diet and foodways. It follows that pottery vessels should be identified in the first instance as culinary technology, rather than a set of cultural signifiers. Sibbesson argues that we should address Neolithic ceramic assemblages as fulfilling the cooking, serving, processing and storage needs of past communities, who in most cases would have been the manufacturers as well as the users of the vessels. The priorities that they will have followed in mixing clay and temper, and forming pots, will have primarily related to the demands of cooking and consuming food. At each stage from acquiring raw materials, to forming and firing vessels, to cooking and eating, pottery is intimately connected to the human body. It is notable, too, that pots are often conceptualized as bodies: even in the contemporary west, we speak of them as having

‘mouths’, ‘lips’, ‘skins’, ‘bellies’, ‘waists’ and ‘shoulders’. There is, perhaps, something about the form and feel of pottery containers that invites comparison with the human body. Sometimes this is rationalised in terms of representation: pots with faces or particular styles of decoration are interpreted as being ‘like’ persons. However, Ben Alberti argues that in some cases it is not that pots represent bodies, they *are* bodies (2016, 170). This brings us back to Harris’ arguments about Neolithic ontology: It may be that Neolithic material things in general were not understood as resembling human (or animal) bodies, so much as partaking of the same kinds of bodily qualities, including animacy.

PERFORMANCE, DEATH AND VIOLENCE

Just as we have emphasised the performative aspects of violence, labour, handicrafts and ritual, so Kenneth Brophy, Gavin MacGregor and Gordon Noble point to the character of cremation as a performance that affected the bodies of both the deceased and the onlookers or witnesses. Although the cremation of the dead was sporadically practiced from the start of the Neolithic in Britain, it became virtually the only archaeologically detectable form of mortuary practice between about 3000 and 2500 BC. As such it was connected with a suite of insular innovations that spread across Britain and Ireland in the earlier third millennium: Grooved Ware, timber circles, palisaded enclosures, cellular houses, stone circles and henge monuments (Sheridan 2004; Thomas 2010). As Brophy, MacGregor and Noble point out, at some sites such as Forteviot, groups of cremation burials predate the construction of monuments of various kinds. Their view is that the intense spectacle provided by the burning of a human body on a pyre had a role in giving a specific location a special character, by generating powerful memories amongst the mourners. Part of this process involved the radical changes that the human body undergoes in the course of cremation, with flesh, bones and viscera being sequentially revealed in the course of the conflagration. But equally, in gathering burnt bones and ashes from the pyre, which might then be mingled or dispersed, people were afforded new and unfamiliar intimate experiences of bodily materials.

Brophy, MacGregor and Noble’s Scottish material suggests that there was a kind of reciprocal relationship between the identities of the bodies of the dead and those of places, in which the fixing of the location where the deceased leaves the social world confers a visibility upon it, while also creating the conditions for its future use. A very similar picture emerges from Sam Walsh and Roger Matthews’ study of early Neolithic burial in the Middle East. Here, the presence of disarticulated human remains below the floors of buildings created a connection between the dead and architectural space. Like Brophy, MacGregor and Noble, Walsh and Matthews refer to the *drama* of death and transformation, and the implication is that the increased connectedness between the dead and specific locations developed in parallel with the increasing sedentariness of the living.

Claudia Defrasne’s study of the statue-menhirs of the central Alps introduces a very different aspect of embodiment. These upright stones are sometimes difficult to identify as straightforwardly anthropomorphic, having shapes that sometimes suggest a head or shoulder, but no distinct faces or body parts. Instead, they carry images of artefacts: daggers, halberds and necklaces, which would be carried or worn by humans. As Defrasne

points out, the stones appear to be gendered, and the contrasting shapes for male and female menhirs brings to mind the suggestion that the stones of the West Kennet Avenue, connected to the Avebury stone circle in southern Britain, were alternately tall pillars and broad slabs (Burl 2002, 246). So this is a pattern that may have a broader currency. In the case of the Alpine menhirs, Defrasne argues that gender appears to have been connected less with a particular given status than with a set of activities, such as the hunting of deer or ibex. Taken together, this evidence might suggest that this was another case in which objects under consideration were not understood as representations of human bodies, but as bodies in themselves. Little attempt is made to work the stone into a semblance of a biological body: instead, the artefacts and activities that moulded the indeterminate and formless body into something that was gendered are depicted. In a sense, anatomical details may have been inconsequential. If these stones were intended to be deployed at mortuary sites, it may be that they relate to the process by which gendered identities were achieved during the life-course, rather than being assumed from birth (Yates 1993, 50).

Violence enacted upon the body appears again in the paper by Philippe LeFranc, Anthony Denaire, Christian Jeunesse and Bruno Boulestin. In the Neolithic of the Upper Rhine, they describe a series of burials in pits, a minority of which were found in irregular and random body positions, some of them having been subjected to extensive post-mortem brutality. These bodies have often in the past been identified as accompanying or subsidiary burials. As an intriguing alternative, the authors suggest that this treatment involved an *excess* of violence, almost a frenzied attack on the bodies of the dead, and link this to the possibilities of warfare and sacrifice. Perhaps, they argue, human remains that had been employed in ritual acts such as sacrifice might be treated as waste matter, alongside other materials such as pottery vessels and animal bodies. There is an important distinction to be made between violent acts perpetrated on the living (in combat, slaying, or torture), and those that are performed on the passive remains of people who have already expired. Almost by definition, the latter have a symbolic dimension to them, since they neither kill nor inflict pain, but serve to express intentions that may be quite difficult for us to grasp. Some post-mortem bone modification may be simply the consequence of protracted mortuary rites, such as the defleshing of cadavers noted at the causewayed enclosure of Hambledon Hill in Dorset (McKinley in Mercer & Healey 2008, 498). This involved no chop marks, dismemberment or marrow extraction, but rather the severing of muscle attachments and the stripping of soft tissue affecting primarily the skull, femur and pelvis.

The treatment in the Upper Rhine case appears to have been more extensive, and a useful comparison can perhaps be made with the human remains recently excavated at Banbury Lane, near Northampton. Here, a pit had been cut into a triple-ditched circular enclosure, 23m in diameter, and filled with the partial remains of at least 130 people. These were radiocarbon dated to 3360–3100 cal BC. The representation of body parts was highly selective, with many femurs and cranial vaults present, but few hand or foot bones (Holmes *et al.* 2012, 21). The bodies were mostly of adults, and they had been subject to massive post-mortem trauma. They had been dismembered with the use of tools: gouges had been driven into the joints; limbs had been prized apart; bones had been chopped with stone tools, and there was also damage that had had been caused by heavy blunt instruments. As with the Upper Rhine burials, the violence here appears excessive, extreme, and conspicuous. One key piece of evidence at Banbury Lane is that the $\delta^{13}\text{C}$ isotope levels in the bones

were severely depleted, which may have been a consequence of either disease or starvation (Holmes *et al.* 2012). It seems very likely that the highly unusual treatment of these bodies is related to the troubling and inauspicious way in which they died. Plausibly, a community that had been exterminated in this way might be punished or repudiated in an orgy of violence.

CONCLUSION

What kinds of bodies existed in the Neolithic? This question is fundamental to our understanding of the period, and yet it has been somewhat on hold for the past decade. The papers in this volume collectively contribute to an agenda for research programmes that recognize the body as a key integrating theme in Neolithic studies, bringing together analytic and anthropological approaches. The body connects economic production, biological and social reproduction, accumulation and consumption, performance, adornment and identity. Neolithic bodies were cyborg entities, extended, guided and channeled by a complex world of manufactured things, and skilled in a variety of new forms of performative action, from ritual and funerary activity to warfare. Yet the qualities of human bodies were shared by other entities, and the historical particularity of the Neolithic body extends to a range of other forms of corporeality. It is to be hoped that the prospectus developed in this book is one that will now be taken forward with enthusiasm.

REFERENCES

- Alberti, B. (2016) Archaeologies of ontology. *Annual Reviews of Anthropology* 45, 163–79.
- Armelagos, G. J., Goodman, A. H. and Jacobs, K. H. (1991) The origins of agriculture: Population growth during a period of declining health. *Population and Environment* 13, 9–22.
- Bloch, M. (1974) Symbols, song, dance and features of articulation. *Archives of European Sociology* 15, 55–81.
- Bradley, R. J. (2005) *Ritual and Domestic Life in Prehistoric Europe*. London, Routledge.
- Braidotti, R. (2013) *The Posthuman*. Cambridge, Polity.
- Brück, J. (1998) In the footsteps of the ancestors: A review of Christopher Tilley's 'A phenomenology of landscape: Places, paths and monuments'. *Archaeological Review from Cambridge* 15, 23–36.
- Burl, H. A. W. (2002) *Prehistoric Avebury*. New Haven, Yale University Press.
- Butler, J. (1993) *Bodies That Matter: On the Discursive Limits of 'Sex'*. London, Routledge.
- Conneller, C. (2006) Death. In C. Conneller and G. Warren (eds.) *Mesolithic Britain and Ireland: New Approaches*, 139–64. Stroud, Tempus.
- Dietler, M. (2011) Feasting and fasting. In T. Insoll (ed.) *The Oxford Handbook of the Archaeology of Ritual and Religion*, 179–94. Oxford, Oxford University Press.
- Fowler, C. (2004) *The Archaeology of Personhood: An Anthropological Approach*. London, Routledge.
- Fowler, C. (2010) Pattern and diversity in the early Neolithic mortuary practices of Britain and Ireland. *Documenta Praehistorica* 37, 1–22.
- Gatens, M. (1996) *Imaginary Bodies: Ethics, Power and Corporeality*. London, Routledge.
- Hamilakis, Y., Pluciennik, M. and Tarlow, S. (eds.) (2002) *Thinking Through the Body: Archaeologies of Corporeality*. New York, Kluwer.
- Haraway, D. J. (2016) [1991]. A cyborg manifesto. In D. J. Haraway *Manifestly Haraway*, 3–90. Minneapolis, University of Minnesota.

- Henley, C. (2005) *The Outer Hebrides and the Hebridean World During the Neolithic: An Island History*. PhD Thesis, Cardiff University.
- Hodder, I. (2012) *Entangled: An Archaeology of the Relationships Between Humans and Things*. Oxford, John Wiley.
- Hofmann, D. (2013) Intimate connection: Bodies and substances in flux in the early Neolithic of central Europe. In C. Watts (ed.) *Relational Archaeologies*, 154–72. London, Routledge.
- Holmes, M., Yates, A., Chapman, A. and Wolfram-Murray, Y. (2012) A middle Neolithic enclosure and mortuary deposit at Banbury Lane, Northampton: An interim report. *Northamptonshire Archaeology* 37, 19–28.
- Ingold, T. (2000) *The Perception of the Environment: Essays in Livelihood, Dwelling and Skill*. London, Routledge.
- Konner, M. (1978) Nursing frequency and birth spacing in Kung hunter-gatherers. *IPPF Medical Bulletin* 15, 1–3.
- Meillassoux, Q. (2008) *After Finitude: An Essay on the Necessity of Contingency*. London, Bloomsbury.
- Mercer, R. and Healy, F. (2008) *Hambledon Hill, Dorset, England. Excavation and Survey of a Neolithic Monument Complex and its Surrounding Landscape*. London, English Heritage.
- Meskell, L. (1996) The somatisation of archaeology: Institutions, discourses, corporeality. *Norwegian Archaeological Review* 29, 1–16.
- Molleson, T. (1992) The eloquent bones of Abu Hureyra. *Scientific American* 271, 70–7.
- Neil, S., Evans, J., Montgomery, J. and Scarre, C. (2016) Isotopic evidence for residential mobility of farming communities during the transition to agriculture in Britain. *Royal Society Open Science* 3, DOI: 10.1098/rsos.150522 (accessed on 3rd July 2018).
- Nilsson Stutz, L. (2016) Building bridges between burial archaeology and the archaeology of death: where is the archaeological study of the dead going? *Current Swedish Archaeology* 24, 13–36.
- Robb, J. (2013) Material culture, landscapes of action, and emergent causation. *Current Anthropology* 54, 657–83.
- Robb, J. and Harris, O. (2013) *The Body in History: Europe from the Palaeolithic to the Future*. Cambridge, Cambridge University Press.
- Roberts, C. A. and Cox, M. (2003) *Health and Disease in Britain: From Prehistory to the Present Day*. Gloucester, Sutton.
- Ruff, C. B., Holt, B., Niskanen, M., Sladek, V., Berner, M., Garofalo, E., Garvin, H. M., Hora, M., Junno, J.-A., Schuplerova, E., Vilkama, R. and Whittey, E. (2015) Gradual decline in mobility with the adoption of food production in Europe. *Proceedings of the National Academy of Science* 112, 7147–52.
- Schulting, R. J. and Fibiger, L. (2012) Skeletal evidence for interpersonal violence in Neolithic Europe: An introduction. In R. Schulting and L. Fibiger (eds.) *Sticks, Stones and Broken Bones: Neolithic Violence in a European Perspective*, 1–16. Oxford, Oxford University Press.
- Serjeantson, D. (2006) Food or feast at Neolithic Runnymede? In D. Serjeantson and D. Field (eds.) *Animals in the Neolithic of Britain and Europe*, 113–34. Oxford, Oxbow Books.
- Sheridan, J. A. (2004) *Going round in circles? Understanding the Irish grooved ware 'complex' in its wider context*. In H. Roche, E. Grogan, J. Bradley, J. Coles and B. Raftery (eds.) *From Megaliths to Metal: Essays in Honour of George Eogan*, 26–37. Oxford, Oxbow Books.
- Spindler, K. (1994) *The Ice Man*. London, Weidenfield and Nicholson.
- Thomas, J. S. (2015a) What do we mean by 'Neolithic societies'? In C. Fowler, J. Harding and D. Hofmann (eds.) *The Oxford Handbook of Neolithic Europe*, 1073–92. Oxford, Oxford University Press.
- Thomas, J. S. (2015b) House societies and founding ancestors in Early Neolithic Britain. In C. Renfrew, M. Boyd and I. Morley (eds.) *Death Rituals, Social Order and the Archaeology of Immortality in the Ancient World*, 138–52. Cambridge, Cambridge University Press.

- Tilley, C. Y. (1994) *A Phenomenology of Landscape: Paths, Places and Monuments*. Oxford, Berg.
- Wahl, J. and Trautmann, I. (2012) The Neolithic massacre at Talheim: A pivotal find in conflict archaeology. In R. Schulting and L. Fibiger (eds.) *Sticks, Stones and Broken Bones: Neolithic Violence in a European Perspective*, 77–100. Oxford, Oxford University Press.
- Yates, T. (1993) Frameworks for an archaeology of the body. In C. Tilley (ed.) *Interpretative Archaeology*, 31–72. Oxford, Berg.